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## Interventions for treatment related side effects in older women with breast cancer

Stephanie Suarez  
*University of Central Florida*

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# INTERVENTIONS FOR TREATMENT RELATED SIDE EFFECTS IN OLDER WOMEN WITH BREAST CANCER

by

STEPHANIE N. SUAREZ

A thesis submitted in partial fulfillment of the requirements  
for the Honors in the Major Program in Nursing  
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and in The Burnett Honors College  
at the University of Central Florida  
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Thesis Chair: Dr. Victoria Loerzel

## Abstract

Over half (57%) of the women diagnosed with breast cancer are age 65 and older. Treatment for breast cancer may exacerbate current chronic illnesses and/or cause multiple treatment related side effects such as insomnia, fatigue, decreased physical functioning, alterations in body image, poorer quality of life, and changes in psychosocial health. While many women with breast cancer experience these changes, research suggests that older women have different needs than younger women and may not always benefit from interventions. The purpose of this integrative review of literature was to evaluate interventions designed to improve treatment related side effects in female breast cancer survivors age 65 years and older.

This review of literature was conducted using CINAHL, PsycINFO, and MEDLINE databases using various key terms. Inclusion criteria consisted of peer reviewed research articles, women who have experience breast cancer, interventions directed at decreasing side effects, and research articles written in the English language. While using these search criteria, no interventions were found therefore, the age group was lowered to include women 50 and older. Eleven studies met the inclusion criteria.

Interventions addressed a variety of treatment related side effects and were delivered in multiple formats. The findings indicate that interventions resulted in a significant improvement in sleep and fatigue, physical function, perception of body image, psychosocial health, and quality of life for older women with breast cancer. While these findings are positive, the literature did not break down results based on developmental stage or “older” age groups. Currently, there is limited literature that examines interventions in women age 65 and older, this

may limit nurses' ability to suggest successful interventions to some of our oldest cancer survivors.

## Dedication

To my parents, Manuel and Carmen, who have always provided me with a lifetime of unconditional love and support through everything. Your hard work and dedication in all that you do has inspired me throughout my entire life. The morals you have instilled in me and the examples you have set for me have made me into the person I am today. You guys are not only my parents, but also my lifelong best friends. I love you!

To my little sister, Mallory, who has always brightened up the most challenging days for me. You have grown up to be such a beautiful, intelligent, and inspiring young woman. Your academic and athletic achievements truly amaze me and I hope I have set nothing but the best example for you to follow. You are the apple of my eye and I am so proud of you!

To my grandmother, Mamama, who has always been like a second mother to me. I have wanted nothing more than to make you proud through all of my achievements. Being away from you throughout my four years of college has been something that I still struggle with to this day. You are my rock and you tie our family together; I don't know what I would ever do without you! I couldn't have asked for a more spectacular person to call my grandmother.

To my grandpa, Weeto, who is watching over all of us in heaven. It has been so long since you have been here with us but I know you are always with us in spirit. I always pray and give thanks that you are protecting us and leading us all in the correct path. Nothing has been the same since you have been gone; there is still always one empty seat on Thanksgiving and Christmas. We miss you and love you very much, our angel!

To my grandparents, Abuela and Abuelo, who have always been such a beautiful part of my life. I have been blessed to have such a spectacular set of grandparents who have always been so loving and supportive to my family. Aside from my parents, you have both shown me the true meaning of love and life long happiness. I cannot wait to move home and enjoy your company and home cooked meals that are always so delicious!

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In loving memory of all women who have not been able to win the battle of Breast Cancer.

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## Introduction

Breast cancer is the most common cancer among women in the United States (Centers for Disease Control and Prevention [CDC], 2012). Women have a 1 in 8 or 12.3% risk of developing breast cancer throughout their lifetime (Reed & Audisio, 2010). In 2012, it was estimated that there were more than 2.9 million women living in the United States with a history of breast cancer, and an additional 226,870 women were projected to be diagnosed (American Cancer Society, 2012). The median age at diagnosis is 61 years, and 41% of all cases are seen in women aged 65 or older (VanderWalde & Hurria, 2012; Surveillance Epidemiology and End Results [SEER], 2012). The number of women aged 65 and older diagnosed with breast cancer is expected to increase within years to come as a result of prolonged life expectancy among the baby boomer population (Heidrich, Egan, Hengudomsub, & Randolph, 2006; Reed & Audisio, 2010).

There are many treatments available to control this systemic disease in older women including chemotherapy, radiation, surgical procedures, and hormone therapy. Although the use of these treatment modalities has assisted many people to overcome this disease, they have also left older breast cancer survivors with unwanted life long side effects (VanderWalde & Hurria, 2012). Common side effects reported by older women due to cancer treatments include, but are not limited to, fatigue; arm dysfunction; pain; weight gain; flu- like symptoms; neuropathy; neurocognitive changes; cardiomyopathies; bone fragility; infection; nausea and vomiting; dehydration; diarrhea; hot flashes; weakness; and dry mouth (Heidrich, et al., 2006; VanderWalde & Hurria, 2012; Royer, Phelan, & Heidrich, 2009).

In addition to the effects of cancer and its treatments, older women can also struggle with multiple symptoms caused by normal age-related physiologic changes, and/or multiple comorbid health issues. Older women are bombarded by numerous symptoms, which in turn need to be evaluated in order to distinguish the primary causing factors (Royer et al., 2009). In a comparative study conducted by Heidrich, Egan, Hengudomsb, and Randolph (2006) which examined symptoms and symptom beliefs of breast cancer survivors aged 65 and older, the majority of women reported that aging was the cause of their symptoms. In turn, this led to a decreased likelihood of self-care behaviors to manage symptoms (Heidrich et al., 2006).

## Problem

An estimated two million women are surviving breast cancer in the United States, representing 22% of all cancer survivors, making them the largest survivor population. Little information is known about the experience of older women completing breast cancer treatment but current findings show that there is a need to provide comprehensive information and support to help women transition from breast cancer therapies (Cappiello, Cunningham, Knobf, & Erdos, 2007). Research has established that women of different ages have different needs and concerns when faced with breast cancer. Younger women aged 64 and under, reported apprehensions about their sexual life, employment and financial status, and family dynamics (Loerzel, McNees, Powel, Su, & Meneses, 2008). On the contrary, older women placed a greater emphasis on cognitive changes and deficits in concentration (Loerzel, McNees, Powel, Su, & Meneses, 2008). Not only do women over the age of 65 put an emphasis on different aspects of treatment related side effects due to breast cancer, but they have also reported accepting these treatment related side effects as a part of life and they often associated them with causes other than breast cancer (Loerzel & Aroian, 2012).

According to VanderWalde & Hurria (2012), a review of the Southwest Oncology Group therapeutic trials was performed and concluded that only 9% of women enrolled in studies of breast cancer were aged 65 and older, despite that 41% of women diagnosed with breast cancer are within this age group. As a result, health care professionals have limited comprehension of the similarities and differences between older and younger breast cancer survivors, which ultimately affects the support given to older women (VanderWalde & Hurria, 2012; Loerzel et al., 2008).

Due to the under enrollment of older women with breast cancer in clinical trials and the vast amount of research supporting effective interventions aimed at the younger population, the shortage of evidence-based data on older women will continue. Consequently, this will further prevent health care providers and older breast cancer survivors from implementing effective interventions to cope with various side effects of cancer treatments, comorbidities, and aging.

## Purpose

The purpose of this thesis is to present the findings of an integrative review of research regarding interventions that have been used to help women over the age of 65 manage treatment related side effects from breast cancer. Findings of this thesis may promote further studies regarding the creation of age specific interventions aimed and tested solely on older women to improve self-care techniques and management of side effects seen in this population. This will be done by providing a comprehensive description of interventions that have been used to manage side effects among the underrepresented group of women whom are 65 and older.

## Methods

A systematic review of literature related to interventions aimed at women aged 65 or older who are seeking to manage treatment related side effects resulting from cancer treatments was conducted. The databases used were the Cumulative Index to Nursing and Allied Health Literature (CINAHL), MEDLINE- EBSCOhost, and PsycInfo. Inclusion criteria consisted of interventions aimed at women 65 and older with breast cancer, peer reviewed research articles, women who have experience breast cancer, interventions directed at decreasing side effects, and research articles written in the English language. Exclusion criteria consisted of literature reviews, interventions primarily aimed at women less than 65 years of age, males, and research articles written in non-English languages. The three search terms that were continuously used throughout each search were “breast cancer”, “intervention”, and “women 65+ older”. Along with those search terms a treatment related side effect was used. The treatment related side effects searched were: body image, lymphedema, weight gain, quality of life, sleep, insomnia, hot flashes, sexual\* functioning, pain, and fatigue.

After searching using the above criteria, only one article was found pertaining to interventions used to treat side effects in women ages 65 years and older (Refer to Table 1). The majority of the research articles found were not used for this literature review because it did not meet the appropriate criteria due to the specified age range of women 65 years or older.

**Table 1: Search One**

<b>Constant Terms</b>	<b>Interchangeable Side Effect Terms</b>	<b>Articles Found</b>	<b>Articles that met search criteria</b>	<b>Article used in thesis</b>
Breast cancer	Body Image	37	0	0
Intervention	Lymphedema	3	0	0
Women 65+ older	Weight Gain	8	0	0
	Quality of Life	22	1	0
	Sleep	7	0	0
	Insomnia	5	0	0
	Hot Flashes	1	0	0
	Sexua* Functioning	0	0	0
	Pain	8	0	0
	Fatigue	18	0	0

Due to the small amount of research found using the search criteria described above the criteria was expanded. The majority of the articles previously found included articles that focused on women well below the age of 65. The inclusion criteria were adjusted to include studies that focused on older women aged 50 and older. The same databases as described in the prior search were used. The constant search terms used did change. “Breast cancer” and “older women” were constant in each search. The same treatment related side effect terms used in the first search, in addition to anxiety, depression, and physical function, were used interchangeably. With the changes made between the first and second search, 27 articles were found that met the search criteria (Refer to Table 2).

After thoroughly reviewing each of the 27 articles found that were thought to fit the search criteria, only 8 were used in this literature review. Factors that led to exclusion included: unclear determinants of age groups, lack of specificity to breast cancer, inclusion of women

under the age of 50, literature reviews, no intervention was being implemented, quantitative studies, and the inclusion of women still undergoing breast cancer treatments.

**Table 2: Search Two**

<b>Constant Terms</b>	<b>Interchangeable Side Effect Terms</b>	<b>Articles Found</b>	<b>Articles that met search criteria</b>	<b>Articles used in thesis</b>
Breast cancer	Body Image	45	0	0
Older Women	Lymphedema	20	1	0
	Weight Gain	41	0	0
	Quality of Life	304	6	4
	Sleep	25	3	1
	Insomnia	13	0	0
	Hot Flashes	32	0	0
	Sexua*	21	2	2
	Functioning			
	Pain	93	0	0
	Fatigue	56	1	0
	Anxiety	103	9	1
	Depression	129	3	0
	Physical	40	2	1
	Function			



## Findings

Few intervention studies have been used to help older breast cancer survivors manage treatment related side effects. The studies specific to older women focused on increasing quality of life, physical functioning, emotional, social and spiritual well being, diet quality, self efficacy, and coping skills while decreasing fatigue, depression, sleep disturbances, anxiety, and symptom distress. The interventions found have used several different modes of delivery and implication including complementary and alternative medicine, exercise, technology, and education. Eight intervention studies will be discussed in this thesis. The efficacy of these interventions will be presented.

### *Complementary and Alternative Medicine Intervention*

Nidich and colleagues (2009) conducted a single-blind randomized controlled trial which evaluated the effects of a Transcendental Meditation (TM) program on quality of life (QOL) in older women with stage II to IV breast cancer. The TM program originates from a traditional system of natural medicine, which is believed to invigorate the body's 'inner intelligence.' This technique is described as a simple learning method that allows people to settle their minds and achieve 'restful alertness' which is characterized by "decreased respirations, blood lactate, and basal skin conductance levels; regulation of cortisol and other hormones related to chronic stress; and high electroencephalography coherence" (Nidich et al., 2009). It was hypothesized that this technique would reduce physiological stress and improve overall quality of life. A total of 130 women aged 55 years and older (mean age 63.8) completed the study. Sixty-four participants were randomized into the TM group and 66 to the control group- who received standard care.

Data was collected using The Functional Assessment of Cancer Therapy-Breast (FACT-B) QOL instrument which has four subscales; functional well-being, emotional well-being, physical well-being, and social/family well-being. The Functional Assessment of Chronic Illness Therapy-Spiritual Well-being (FACIT-SP), which evaluates sense of purposefulness and peace in life and optimism for the future. The Short-Form Health Survey (SF-36) has two subscales; mental health and vitality. Data was collected every six months over an 18-month intervention period.

Participants using the TM program attended a 7-step course taught by qualified instructors, which enabled them to practice TM individually for 20 minutes a day in the comfort of their own homes. In addition, the experimental group were able to participate in optional follow up sessions. These follow up sessions were offered through monthly meetings to further encourage participants in the experimental group to continue practicing the intervention at home. All participants in both the TM and control groups had to maintain their physician prescribed usual care.

Results indicated that the FACT-B total score and subscales of emotional well-being and social well-being showed significant improvement in the TM group compared with the usual care group. Scores on the SF-36 mental health scale also significantly improved for the TM group compared to the control group. No other significant changes were noted.

### *Exercise Interventions*

Damush and colleagues (2006) conducted a pretest-posttest, single group study aimed at improving QOL in older breast cancer survivors through the use of an exercise self-management home based intervention including intensive social support. A total of 34 women aged 50 and

older (mean age 59.6) completed the study. Initially, participants completed a triweekly one hour self-management session to increase exercise self-efficacy, social support and physical activity. Subjects were educated in regards to endurance, flexibility, and resistance training through the use of exercise guides and videos along with exercise tools such as pedometers and exercise bands. The intervention exercise regimen included 30 minutes of brisk walking starting two times per week and gradually increasing to six days per week. Strength exercises were also recommended at least two times per week. Participants engaged in goal setting and behavioral contracts using weekly contracts to promote behavioral changes. The project coordinator made three follow-up phone calls during week 4,6, and 10 of the intervention to discuss behavioral contracts, goals and problem solving with the participants.

Data was collected at baseline and six months post accrual using the Community Healthy Activities Model Program for Seniors (CHAMPS), which measured type, frequency, and duration of physical activity plus weekly caloric expenditure. The Senior Fitness Test (SFT) was used to detect changes in functional fitness status. Health-Related Quality of Life (HRQOL) was measured by using the Cancer Rehabilitation Evaluation System-Short Form (CARE-SF) which assesses physical and psychosocial functioning. The Functional Assessment of Cancer Therapy-Fatigue (FACT-F) is a 13 item self-reported instrument used to measure fatigue in patients with breast cancer.

Results indicated a significant increase in functional fitness status through the decrease in perceived exercise barriers and an increase in frequency, duration, and caloric expenditure of weekly physical activity. There was also a significant increase in HRQOL and a decrease in depression and fatigue. No other significant changes were noted.

In another study, Denmark-Wahnefried and colleagues (2006) conducted a two-arm, randomized controlled trial to determine if the enrollment of breast and prostate cancer survivors in a six month home-based diet and exercise intervention would yield improvements in physical functioning. One hundred eighty two breast (n=104) and prostate (n=78) cancer survivors, 65 years and older (mean age 71.7) completed this study. Participants were either assigned to a treatment group or a control group. The treatment arm was given printed materials aimed at increasing exercise habits and improving overall diet quality and also received phone counseling. The control arm participated in general health counseling and received the same materials as the treatment arm. Both arms included 12 sessions lasting 30 minutes, two times per month over a 6-month period. Follow up telephone surveys occurred at month 6 and 12 of the intervention.

Data was collected in order to measure 11 different variables, not all instruments were specified. However, instruments that were mentioned include the Community Healthy Activities Models Program for Seniors (CHAMPS) which measures physical activity; Short Form Physical Function Subscale (SF-36) which measures functional status; Centers for Epidemiologic Studies of Depression Index (CES-D) which measures the risk for depression; the Functional Assessment of Cancer Therapy-General (FACT-G) which measures quality of life; Older Americans Resources and Services Index (OARS) which measures comorbidity; Duke Social Support Index (DSSI) which measures subjective and instrumental support. Results showed a significant increase in diet quality in the intervention arm along with significant improvements in self-efficacy for exercise and exercise frequency. Although not significant, both the intervention and control arms had an increase in QOL, which stabilized at higher levels and a decrease in

depression, which stabilized at lower levels. No other significant changes were noted in either group.

In another study, Payne and colleagues (2008) conducted a longitudinal randomized clinical trial to examine the relationships that exist among cortisol, serotonin, IL-6, and bilirubin biomarkers and fatigue, sleep disturbances, and depressive symptoms. This study was also conducted to determine the viability of a home-based walking exercise program for older women with breast cancer receiving hormonal therapy. The home-based walking intervention consisted of moderate walking activity for 20 minutes, four times per week. Twenty women aged 55 years (mean age 64.7) and older receiving hormone therapy for breast cancer completed this study. 10 subjects were randomized into an intervention group and 10 into a usual care group, which is defined as standard interaction with nurses, physicians and staff.

Data was collected using the Piper Revised Fatigue Scale (PFS), which is a 22-item instrument that measures four components of fatigue (behavior or severity, affective, sensory, and cognitive mood). Sleep disturbances were measured with the 19-item Pittsburgh Sleep Quality Index (PSQI) and depressive symptoms were measured with the 20-item Center for Epidemiological Studies-Depression Scale (CES-D). The participants were asked to record the frequency and duration of their walking activity on the logs provided to them. Blood samples were also taken to measure serum cortisol, serotonin, IL-6, and bilirubin biomarkers. Blood samples were drawn at baseline and at the 12-week clinic visit. The exercise intervention lasted 14 weeks and survey data was collected at baseline, 2 weeks, 12 weeks, and 14 weeks.

Results showed that there was a significant improvement in the PSQI scores in the exercise group, which indicates improved sleep quality. While there was no change in

depression, there was a significant effect on serotonin levels seen in the exercise group suggesting that exercise exerts a negative influence on serotonin production. No other significant changes were noted.

### *Technology Interventions*

Crane-Okada and colleagues (2012) conducted a randomized longitudinal study in order to examine senior peer counseling, conducted via telephone, and its effects regarding psychosocial support at different periods throughout treatment after breast cancer surgery. One hundred forty two women aged 50 years and older (mean age: 61.8) completed this study. Subjects were separated by age then randomized to one of three groups, which would receive five scheduled phone calls from a senior peer counselor. The first group was contacted within 72 hours of surgery and received five phone calls through five weeks post surgery and was labeled immediate contact (IC). The second group was delayed contact (DC) meaning that they weren't contacted until they were 6 weeks post surgery and received five phone calls through week 10 post surgery. The third group was usual contact (UC), which indicated that no senior peer counselor contact the participant unless the participant request to be contacted. The role of the senior peer counselors was to provide understanding and support to participants during times of crisis or life transitions such as coping with stressful events such as personal loss, retirement, comorbid and chronic illness, etc.

Data was collected before surgery, post intervention, and six months after surgery using the Hospital Anxiety and Depression Scale (HADS), which measured the participant's anxious mood. Overall social support was measured with the Interpersonal Relationship Inventory (IPRI)

short form. The Brief COPE score evaluates the use of 14 coping strategies in stressful life events such as breast cancer. The Fear of Recurrence (FOR) scale was used to measure the fear of recurrence and was only assessed at six months.

Results denoted that at six months, significant effects of age were notable. Younger participants reported higher social support, higher FOR scores, and were more likely to use a coping strategy compared to their older counterparts regardless of the intervention group they were randomized to. Participants in the UC group were the least likely to use a coping strategy to deal with stressful life events. Furthermore, mean anxious mood declined over time in most participants before entering surgery. In this study, it was difficult to differentiate what the specific effects of peer counseling were due to the high overall support score that was yielded from the intervention. No other significant changes were noted.

### *Education Interventions*

Mishel and colleagues (2005) conducted a randomized controlled study to evaluate the benefits of a theoretically based uncertainty management intervention for older breast cancer survivors who have remained recurrence-free. Five hundred nine women aged 55 and older (mean age 64) participated in this study. Women were randomly assigned to an intervention group or to a usual care group. The intervention group was given resources such as a binder that contained audiotapes and a self-help manual. Nurses guided subjects through the use of these tools via four weekly telephone sessions. The audiotapes were used to deliver cognitive strategies in order for participants to achieve strong emotional coping responses to threats of cancer recurrence. The self-help manuals were packed with behavioral strategies in which the

participant could develop management skills, and obtain information and resources on long-term cancer treatment related side effects.

Data was collected using the Cancer Survivor Knowledge Scale, which is a 16-item scale that assesses cancer knowledge and uncertainty management measures. The five-item Patient/Provider Communication Scale measured the amount the subjects communicated with their health care providers. Social support satisfaction was measured by using the satisfaction subscale from the short form social support questionnaire. Coping strategies were assessed by using the Cognitive Coping Strategies Questionnaire (CSQ). The CSQ has six subscales: coping self-statements, praying/hoping, ignoring, increasing behavioral activities, and catastrophizing and diversion of attention. Physiological stress was measured by using the Profile of Mood States-Short Form (POMS-SF). Data was collected at baseline and again at 10 months post baseline.

Results indicated that the intervention group had a significant increase in uncertainty management, cognitive reframing, and satisfaction with social support while the control group didn't change from baseline. There was also an increase in patient-provider communication among African American women within the intervention group. An increase in cancer knowledge was also prominent in both the intervention group and usual care group but the intervention group had the greatest increase from baseline to 10 months. No other significant changes were noted.

Heidrich and colleagues (2009), lead two randomized clinical trials and one pre-experimental study used to test the viability and adequacy of a highly individualized representational intervention to improve symptom management (IRIS) in older breast cancer



survivors. They also assessed the short-term effects of an IRIS on symptom distress. The IRIS is an individualized patient-centered counseling interview conducted by advanced practice nurses. In the intervention women chose the symptoms that they were experiencing and wanted to address. The participants created their own goals and were able to choose their own symptom management strategies used to achieve those goals. The length of the intervention varies from 30 to 75 minutes depending on the participants individualized needs regarding beliefs and strategies. The second session of the intervention was conducted over the phone. The phone interviews were used to determine the participant's progress towards self-set goals and strategies that were the most successful in reducing symptoms. They also determined any barriers that existed to achieving goals and revised the plan as needed. Eighty-two women aged 65 and older completed these studies.

In pilot study one there was a total of 21 women ages 65 to 86 (mean age 72). The purpose of study one was to measure feasibility and collect descriptive data. In pilot study two there was a total of 20 women ages 65 to 82 (mean age 69.7). Study two was intended to address the limitations in study one. Measures for symptom outcomes were altered and the frequency of IRIS increase by offering extra contact time with the nurse. Enrollment, retention, and satisfaction within the study was improved by implementing a delayed IRIS control condition. The protocol in study two was very similar to study one. Study two included four telephone reinforcement sessions, two times per week, two weeks after baseline opposed to at four weeks in study one. In pilot study three there was a total of 21 women ages 65 to 73 (mean age 67.9). This study was designed to evaluate the sustainability of conducting the IRIS intervention solely

over the telephone. The time dimensions were the same as study two which were taken at baseline, 2, 4, 6, and 16 weeks. ‘Mood’ was included in study three for exploratory purposes.

In pilot study three, data was collected using the Symptom Bother-Revised Scale (SB-R), which measures symptom distress. The Target Symptom Distress tool measured symptom distress but was only used among the experimental group. The Medical Outcomes Study (SF-36) is a 36-item scale that includes two subscales that measure QOL related to physical and mental health. The Purpose in Life scale (PIL) measured the ability for participants to engage in finding the meaning and purpose of life and spirituality. These factors have previously proven to increase adaptation to breast cancer. The Centers for Epidemiologic Studies-Depression Scale (CES-D) measured depressive symptoms. The STAI- State Anxiety Scale has 20 items related to mood and measures how the respondent feels “right now” for each. The Symptom Management Beliefs Questionnaire (SMBQ) evaluated the subject’s negative beliefs or stereotypes about experiencing breast cancer and symptom management. The negative stereotypes about aging that participants received from healthcare providers was measured through the Communication Attitudes (CommA) scale. Communication Difficulties (CommD) is a six-item scale that assesses difficulties in patient/provider communication about symptoms. The Brief Pain Inventory (BPI) measures symptom severity. The Positive Relations Scale measured emotional support and supportive relationships and the Profile of Mood States- Short Form (POMS) uses five subscales (confusion, tension, anger, fatigue, and depression) to determine mood disturbances from symptoms.

According to the data outcomes, 100% of women conveyed that the information covered in this intervention was important and that it was relative, important, worthwhile, positive, and

gave them the ability to express themselves. Across all three studies, reports of change in symptom management deemed to be the most significant finding. In studies one and two, participants in the IRIS groups were more likely to change their own symptom management behaviors or make changes in their medical treatment when compared to their counterparts in the control groups. Throughout all three studies from baseline to eight weeks, the negative moods from symptoms that decreased significantly included the total POMS score, and the anger and fatigue subscale scores. From baseline to 16 weeks, symptom duration, symptom interference, and negative mood from symptoms (tension, depression, anger, fatigue, and confusion) decreased significantly. Results of pilot study three indicated that the IRIS can be successfully delivered by telephone. The women were able to engage via telephone and perceived the study as helpful and satisfactory. The women in pilot study three continued the intervention after the 16-week assessment.

Loerzel and colleagues (2008) conducted a secondary analysis of a randomized longitudinal repeated measure study to evaluate QOL changes in women 65 years and older that are within the first year of breast cancer survivorship. They also assessed the efficacy of a psychoeducational intervention on survivors' QOL. Data was drawn from the Breast Cancer Education Intervention (BCEI) research study. Fifty women aged 65 years and older (mean age 72.1) participated in this study. Subjects were randomized into an experimental group (N=24) and a control group (N=26). Over a six-month period the experimental group received the BCEI psychoeducational support. Subjects in the psychoeducational intervention arm participated in three educational and support sessions along with five support sessions. These sessions were

either conducted in person or via telephone. Subjects in the control group partook in five attention control sessions, which were either conducted in person or via telephone.

Data was collected using the Quality of Life-Breast Cancer (QOL-BC) 50 item instrument, which measured QOL specifically in women with breast cancer. The QOL-BC contains four subscales, which are physical, psychological, social and spiritual well being.

Results showed that during the first year of survivorship after breast cancer, women reported having good overall QOL and good physical, psychological, social and spiritual well-being at baseline. Although none of the results in this study were significant, the overall QOL experienced by both the experimental and control group declined overtime but, the women in the experimental group experienced less of a decline when compared to women in the control group.

## Discussion

The purpose of this integrated review of this research was to examine current findings related to interventions that improve the management of breast cancer treatment related side effects in older women. Originally, the target age group of women with breast cancer was 65 years and older but no existing interventions were found in the review of literature. The inclusion criteria was then altered to include women, age 50 years and older. A total of eight studies, which included complementary and alternative medicine, exercise, technology, and education interventions, have been examined for their effectiveness in improving outcomes in this population. Overall, the average age of women in these studies was 65.9 years, which indicates that older women aged 65 or older continue to be a minority in interventional studies. This may lead to a decrease in success while being implemented to that specific population of women aged 65 and older. However, overall findings from these studies show significant improvements in various aspects of QOL and psychosocial, physical, and functional well being.

### *Complementary and Alternative Medicine Intervention*

The results of the Transcendental Meditation (TM) intervention indicate that QOL in older women with breast cancer can be improved. Breast cancer patients participating in the Transcendental Meditation program showed a beneficial change in overall QOL, which was the primary outcome of the study, as well as improvements in mental health and emotional and social well being (Nidich et al., 2009). The area of concern throughout this intervention was the improvement of psychosocial stress, which includes impairments in emotional, physical, functional, social, and spiritual well being. The causes of breast cancer are multifactorial;

however, psychosocial stress is associated with the contribution to cancer onset, progression, and mortality (Nidich et al., 2009). Overall the results of this intervention suggest that women benefit from TM programs that are aimed at reducing stress with ease of implementation and individual home practice.

### *Exercise Interventions*

In three studies, exercise self-management interventions were found to improve QOL, physical functioning, fatigue, sleep disturbances, and depressive symptoms in older women with breast cancer (Damush et al., 2006; Denmark-Wahnefried et al., 2006; Payne et al., 2008). Regardless of the amount of exercise prescribed to participants across these three studies, significant improvements were still seen.

In the two different intervention studies conducted by Damush and colleagues (2006) and Denmark-Wahnefried and colleagues (2006), the use of telephone social support and exercise self-management improved psychosocial and physical well-being and QOL. Both of these studies also resulted in decreased depression and fatigue. In contrast, Payne and colleagues (2008) conducted a home based exercise intervention that did not include social support methods. This intervention still yielded an increase in sleep quality and a decrease in serotonin production which suggests that participants would most likely experience a decrease in depressive symptoms due to exercise (Payne et al., 2008). These findings suggest that exercise itself results in positive outcomes and social support may not be the most important part of these interventions.

All three interventions were home-based which allowed the participants to take part in the studies in the comfort of their own home without dealing with barriers such as means of transportation, a strict regimen to be followed, and conflicting personal schedules. The exercise portions of the interventions were all self-managed which may have reduced stress inflicted by participating in the study. The use of social support components in the interventions yielded better results in comparison to not using social support methods. All in all, it is evident that women with breast cancer who exercise may be more likely to have improvements in psychosocial and physical well being and overall QOL (Damush et al., 2006; Denmark-Wahnefried et al., 2006; Payne et al., 2008).

### *Technology Interventions*

The use of senior peer counseling via telephone for psychosocial support of older women after breast cancer surgery was found to significantly increase the use of social support and use of coping strategies among younger participants versus older participants. Younger participants also had a higher fear of recurrence in comparison to older participants. Mean anxious mood identified in patients before surgery also declined in most patients (Crane-Okada, 2012). The majority of topics discussed were psychological and social in nature including anxiety, depression, fear of recurrence, and support networks. Overall participants were very satisfied with their peer counselor and the support received. A few participants indicated the need for more information rather than support while participants in the delayed contact group would have preferred earlier contact. Ten participants continued to receive peer counseling support six

months post surgery. This information suggests that women benefit from support given to them from the comfort of their own home (Crane-Okada, 2012).

### *Education Interventions*

Across three studies, education was the main focus used deliver the intervention. Although each intervention used different techniques throughout implementation, all three interventions targeted the improvement of QOL, uncertainty management, symptom management techniques, and physical, psychosocial, and psychological well being (Heidrich et al., 2009; Loerzel et al., 2008; Mishel et al., 2005).

As Mishel and colleagues (2005) demonstrated, targeting uncertainty management among older women with breast cancer resulted in significantly improved results. The intervention was based off of the uncertainty theory which gives rationale to the way breast cancer survivors may handle situations of importance in regards to their diagnosis. Women may possess the characteristics of inconsistency, randomness, complexity, unpredictability, and lack of information when dealing with illness-related events (Mishel et al., 2005). As shown in this study, targeting uncertainty in the participants through the use if educational audiotapes and self help manuals accompanied by four weekly phone calls resulted in significantly increased positive outcomes. Uncertainty may be the root cause that leads to the inability to form a cognitive structure resulting in poor decision-making, poor psychosocial adjustment, low QOL and posttraumatic stress-like responses in older breast cancer survivors (Mishel et al., 2005). Targeting uncertainty management in healthcare practice may reduce the severity that follows breast cancer diagnosis and treatment related side effects.



In the study conducted by Heidrich and colleagues (2009) participants took part in an individualized intervention to improve symptom management. This study used face-to-face counseling interviews, mixed mode face-to face and via telephone, and solely via telephone. Results for all three pilot studies deemed 100% participant satisfaction for symptom management (Heidrich et al., 2009). This intervention is different from most behavioral or psychoeducational interventions because it is highly individualized and patient centered which may conclude why there was so many significant results (Heidrich et al., 2009).

Loerzel and colleagues (2008) conducted a study to determine QOL changes in older women with early stage breast cancer in first year of survivorship and to evaluate the effectiveness of a psychoeducational intervention on survivors' QOL. Participants received education and support sessions that were either conducted in person or via telephone. This intervention yielded a decline in overall QOL (Loerzel et al., 2008). This is interesting since the parent study showed an overall improvement in QOL for women who participated in the intervention. However, the sample in the parent study had a much lower mean age for participants than the Loerzel study. Although the reason for the decline in QOL is unknown, Loerzel hypothesized that the decline may be linked to older women's participation in the intervention, which may have signaled participants to physical issues related to breast cancer that they previously correlated to some other cause. In addition, it may indicate that the intervention was not appropriate for older women (Loerzel et al., 2008).

### *Summary*

The interventions aimed to improve the effect of treatment related side effects in older women with breast cancer. It was found that complementary and alternative medicine, exercise, technology and educational interventions produce statistically significant results in improving poor psychosocial and physical outcomes in this population. Although no single intervention guaranteed long-term improvements, many of interventions show a decrease in anxiety and depression and an increase in physical function, QOL, coping strategies, and self-efficacy in the post-intervention period. One of the findings concluded in this thesis was that many of these interventions have given women with breast cancer necessary psychological support. As a result, these interventions improve psychosocial and physical well being by providing these women with educational information and the opportunity to gain knowledge and confidence in managing treatment related side effects.

## Limitations

This review of literature noted several limitations to the research. Due to the use of small sample sizes and lack of ethnic diversity in the studies discussed, the findings of this literature review are not generalizable to the entire population of women, age 50 years and older, with breast cancer. During the original search that included women aged 65 years and older, interventions for this population did not exist. It was also challenging to find interventions for women 50 year and older after the criteria was refined. In addition, due to the the nominal amount of research yielded in my findings, there was no way of determining how many women were 65 years or older in these studies which also makes it hard to generalize results to that age group of women with breast cancer. This is a limitation because women of different age groups may react to the diagnosis of breast cancer and present treatment related side effects in unique ways.

The small number of studies available related to improving treatment related side effects in older women with breast cancer is another limitation to this review of literature. The exclusion of older women in interventional studies has led to a knowledge deficit regarding older women with breast cancer. None of the interventions have been duplicated making it difficult to confirm their findings. In addition, most of these studies were conducted over a short time period. Long term effects of these interventions are unknown. Further studies should be carried out to broadent the scope of information pertaining to post-therapy breast cancer patients.

## Recommendations for Nursing

### *Research*

Several implications for research exist. These studies used a variety of different interventions to examine a variety of outcomes. None of these studies examined the same things. Future research should replicate these already existing successful interventions with larger samples and exclusively in women age 65 and older. The inclusion of racial and ethnic diversity within samples is crucial to ensure generalization and accurate replication of the population. Future studies should also be longitudinal to determine if interventions will be effective in improving the management of treatment related side effects long-term. The intervention outcomes previously discussed have yielded substantial results for future research studies. Future research aimed at creating interventions to benefit the management of breast cancer treatment related side effects can combine the results and methods of the studies discussed and create interventions that would generate optimal outcomes.

### *Education*

Nurses should have a general understanding about the difference in needs for women of different ages who are breast cancer survivors. Interventions that work on younger women with breast cancer may not be applicable to their older counterparts. It is vital that nurses are able to detect side effects of breast cancer treatments along with having knowledge about interventions that have or have not worked in older women. Nurses can use the information in this thesis to recommend or explore ways to manage side effects in older women with breast cancer. By

knowing more about these interventions, nurses can tailor patient education towards specific patient needs and give them the ability to guide their patients towards positive health outcomes.

### *Practice*

The findings from this literature review show that psychological and social support along with education and physical activity are effective in improving the management of treatment related side effects in older women with breast cancer. These findings could be incorporated into standard care specifically tailored to older women with breast cancer. This incorporation of successful interventions can increase overall QOL and psychosocial and physical well being. As evidenced by many of the studies discussed, including the patient in a plan of care allows a higher level of compliance to be achieved.. It is important for nurses to educate older women with breast cancer on possible side effects and potential management strategies. Reporting these side effects to health care professionals can allow for the implementation of an intervention used to manage the specific side effect(s) being experienced.

## Appendix: Table of Evidence

Article	Purpose/Design	Intervention	Sample	Outcome Measures	Significant Results
Nidich, S.I., Fields, J.Z., Rainforth, M.V., Pomerantz, R., Cella, D., Kristeller, J., Salerno, J.W., & Schneider, R.H. (2009). A randomized controlled trial of the effects of transcendental meditation on quality of life in older breast cancer patients. <i>Integrative Cancer Therapies</i> , 8(3), 228-234.	Determine if a transcendental meditation program plus standard care intervention helps improve quality of life of older women with stage II to IV breast cancer.  Single-blind randomized controlled trial	Transcendental meditation intervention	<ul style="list-style-type: none"> <li>Size: N= 130</li> <li>Mean age: 63.8 years</li> <li>Stage II-IV</li> </ul>	<ul style="list-style-type: none"> <li>The Functional Assessment of Cancer Therapy-Breast (FACT-B)</li> <li>The Functional Assessment of Chronic Illness Therapy- Spiritual Well-being (FACIT-SP)</li> <li>Short-Form Health Survey (SF-36)</li> </ul>	<ul style="list-style-type: none"> <li>Significant improvement in emotional &amp; social well-being</li> <li>Significant improvement in FACT-B total QOL score</li> <li>Significant improvement in SF-36 mental health score</li> </ul>
Damush, T.M., Perkins, A., & Miller, K. (2005). The implementation of an oncologist referred, exercise self-management program for older breast cancer survivors. <i>Psycho-Oncology</i> , 15, 884-890.	Evaluate if an exercise self-management intervention improved quality of life in older breast cancer survivors  Single group pre/post test	Exercise self-management intervention	<ul style="list-style-type: none"> <li>Size: N=34</li> <li>Mean age: 59.6 years</li> <li>Stage I-II</li> </ul>	<ul style="list-style-type: none"> <li>Community Healthy Activities Model Program for Seniors (CHAMPS)</li> <li>Senior Fitness Test (SFT)</li> <li>Cancer Rehabilitation Evaluation System-Short Form (CARES-SF)</li> <li>Functional Assessment of Cancer Therapy-Fatigue (FACT-F)</li> </ul>	<ul style="list-style-type: none"> <li>Significant increase in frequency &amp; duration of physical activity</li> <li>Significant increase in weekly caloric expenditure</li> <li>Significant increase in health-related QOL</li> </ul>
Denmark-Wahnefried, W., Clipp, E.C., Morey, M.C., Pieper, C.F., Sloane, R., Snyder, D.C., & Cohen, H.J. (2006). Lifestyle intervention development study to	Determine if a lifestyle intervention development study improved physical functioning in older adults with breast and prostate cancer	Home-based diet and exercise intervention to improve physical function	<ul style="list-style-type: none"> <li>Size: N=182</li> <li>Mean age: 71.7 years</li> <li>Primary cancers: Prostate &amp; Breast</li> </ul>	<ul style="list-style-type: none"> <li>Community Health Activities Models Program for Seniors (CHAMPS)</li> <li>Short-Form Health Survey (SF-36)</li> <li>Centers for Epidemiologic Studies</li> </ul>	<ul style="list-style-type: none"> <li>Significant improvement in diet quality index in the intervention arm</li> <li>No significant changes in other domains noted</li> </ul>

improve physical function in older adults with cancer: Outcomes from project LEAD. <i>Journal of Clinical Oncology</i> , 24 (21), 3465-3473.	Randomized study arms: treatment and control arm			of Depression Index (CES-D)	
				<ul style="list-style-type: none"> <li>• Functional Assessment of Cancer Therapy-General (FACT-G)</li> <li>• Older Americans Resources and Services Index (OARS)</li> <li>• Duke Social Support Index (DDSI)</li> </ul>	
Payne, J.K., Held, J., Thorpe, J., & Shaw, H. (2008). Effect of exercise on biomarkers, fatigue, sleep disturbances, and depressive symptoms in older women with breast cancer receiving hormonal therapy. <i>Oncology Nursing Forum</i> , 35(4), 635-642.	Evaluate effectiveness of a prescribed exercise intervention on biomarkers, fatigue, sleep disturbances and depressive symptoms in breast cancer survivors	Prescribed home-based walking exercise intervention with usual care	<ul style="list-style-type: none"> <li>• Size: N= 20</li> <li>• Mean age: 64.7 years</li> </ul>	<ul style="list-style-type: none"> <li>• Piper Revised Fatigue Scale (PFS)</li> <li>• Pittsburgh Sleep Quality Index (PSQI)</li> <li>• Center for Epidemiological Studies- Depression Scale (CES-D)</li> <li>• Blood Sampling</li> </ul>	<ul style="list-style-type: none"> <li>• Significant decrease in PSQI score indicating improved sleep quality</li> <li>• No significant changes in other domains noted</li> </ul>
Crane-Okada, R., Freeman, E., Kiger, H., Ross, M., Elashoff, D., Deacon, L., & Giuliano, A.E. (2012). Senior peer counseling by telephone for psychosocial support after breast cancer surgery: Effects at six months. <i>Oncology Nursing Forum</i> , 39(1), 78-89.	Evaluate the efficacy of senior peer counseling by telephone for psychosocial support after breast cancer surgery	Telephone counseling intervention delivering psychosocial support	<ul style="list-style-type: none"> <li>• Sample: N=142</li> <li>• Mean age: 61.8 years</li> <li>• Stages 0-III</li> </ul>	<ul style="list-style-type: none"> <li>• Hospital Anxiety and Depression Scale (HADS)</li> <li>• Interpersonal Relationship Inventory short form (IPRI)</li> <li>• Brief COPE</li> <li>• Fear of Recurrence scale (FOR)</li> </ul>	<ul style="list-style-type: none"> <li>• Younger participants had increased FOR scores compared to older participants</li> <li>• Younger participants were more likely to use the coping strategy and participants in the usual care group were less likely.</li> <li>• Significant decrease in mean anxious mood before surgery</li> </ul>



					<ul style="list-style-type: none"> <li>No other significant changes noted</li> </ul>
<p>Mishel, M.H., Germino, B.B., Gil, K.M., Belyea, M., Laney, I.C., Stewart, J., Porter, L., Clayton, M. (2005). Benefits from an uncertainty management intervention for African-american and caucasian older long-term breast cancer survivors. <i>Psycho-Oncology</i>, 14, 962-978.</p>	<p>Evaluate the efficacy of a theoretically based uncertainty management intervention</p> <p>Randomized controlled trial</p>	<p>Telephone and audiotape intervention delivering uncertainty management to older long-term breast cancer survivors</p>	<ul style="list-style-type: none"> <li>Sample: N= 509</li> <li>Mean age: 64 years</li> <li>Stages in situ-III</li> </ul>	<ul style="list-style-type: none"> <li>Cancer Survivor Knowledge Scale</li> <li>Patient/Provider Communication Scale</li> <li>Cognitive Coping Strategies Questionnaire (CSQ)</li> <li>Profile of Mood States-Short Form (POMS-SF)</li> </ul>	<ul style="list-style-type: none"> <li>Significant increase in cognitive reframing, cancer knowledge, patient-health care provider communication, and coping skills</li> </ul>
<p>Heidrich, S.M., Brown, R.L., Egan, J.J., Perez, O.A., Phelan, C.H., Yeom, H., &amp; Ward, S.E. (2009). An individualized representational intervention to improve symptom management (IRIS) in older breast cancer survivors: Three pilot studies. <i>Oncology Nursing Forum</i>, 36(3), 133-143.</p>	<p>Evaluate the feasibility and acceptability of an individualized representational intervention to improve symptom management in older breast cancer survivors</p> <p>Two small randomized clinical trials &amp; one pre-experimental study</p>	<p>Pilot 1: Measure feasibility and collect descriptive data</p> <p>Pilot 2: Same as pilot 1 but addressed shortcomings of pilot 1</p> <p>Pilot 3: Determine if IRIS intervention can be delivered via telephone</p>	<ul style="list-style-type: none"> <li>Sample: N= 21</li> <li>Mean age: 67.9 years</li> </ul>	<ul style="list-style-type: none"> <li>Symptom Bother-Revised Scale (SB-R)</li> <li>Target Symptom Distress</li> <li>Medical Outcomes Study SF-36</li> <li>Purpose in Life Scale (PIL)</li> <li>Center for Epidemiologic Studies-Depression Scale (CES-D)</li> <li>STAI-State Anxiety Scale</li> <li>Symptom Management</li> </ul>	<ul style="list-style-type: none"> <li>Significant increase in symptom management behaviors among all pilot studies</li> <li>Significant decrease from baseline to 8 weeks in negative mood</li> <li>Significant decrease from baseline to 16 weeks in symptom duration, symptom interference, and negative mood from symptoms</li> </ul>

			Beliefs Questionnaire (SMBQ) <ul style="list-style-type: none"> <li>• Communication Attitudes (CommA)</li> <li>• Communication Difficulties (CommD)</li> <li>• Brief Pain Inventory (BPI)</li> <li>• Positive Relations Scale</li> <li>• Profile of Mood States-Short Form (POMS)</li> </ul>		
Loerzel, V.W., McNeese, P., Powel, L.L., Su, X., & Meneses, K. (2008). Quality of life in older women with early-stage breast cancer in the first year of survivorship. <i>Oncology Nursing Forum</i> , 36(6), 924-932.	Evaluate QOL changes in older women with early-stage breast cancer in the first year of survival and report on the effectiveness of a psychoeducational intervention on survivors' QOL  Longitudinal randomized repeated measures approach	Psychoeducational intervention delivered in person or via telephone to improve QOL	<ul style="list-style-type: none"> <li>• Sample: N=50</li> <li>• Mean age: 72.1 years</li> <li>• Stages I-II</li> </ul>	<ul style="list-style-type: none"> <li>• Quality of Life-Breast Cancer (QOL-BC)</li> </ul>	<ul style="list-style-type: none"> <li>• Overall QOL declined throughout intervention but the experimental group had a smaller decline in comparison to the control group</li> </ul>

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