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Body Image in Younger Breast Cancer Survivors: A Systematic Review

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Abstract

Background—Body image is a complex issue with the potential to impact many aspects of cancer survivorship, particularly for the younger breast cancer survivor.

Objective—The purpose of this review is to synthesize the current state of the science for body image in younger women with breast cancer.

Intervention/Methods—Combinations of the terms “body image,” “sexuality intervention,” “women,” “younger women,” and “breast cancer” were searched in the PubMed, PsycInfo, CINAHL, Web of Knowledge and Science Direct databases through January 2014. Inclusion criteria for this review were: 1) original research; 2) published in English from the year 2000 forward; 3) measuring body image as an outcome variable; and 4) results included reporting of age-related outcomes.

Results—Thirty-six articles met the inclusion criteria. The majority of studies were cross-sectional, with extensive variation in body image assessment tools. Age and treatment type had a significant impact on body image, and poorer body image was related to physical and psychological distress, sex and intimacy, and the partnered relationship among younger women. Only one intervention study found a significant improvement in body image post-intervention.

Conclusions—Findings suggest body image is a complex post-treatment concern for breast cancer survivors, particularly younger women. The findings of this review are limited by the high level of variation in the methods for assessing body image.

Implications for Practice—Further research of interventions to address body image concerns following treatment for breast cancer is warranted. Improvement of body image may improve the quality of life of younger breast cancer survivors.

Introduction

Breast cancer is the second most common type of cancer in the United States, and over 89% of those diagnosed with breast cancer are surviving at least 5 years after diagnosis.¹ In terms of younger women diagnosed with breast cancer, there is a growing number of younger

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women diagnosed, with an estimate of 33.6% of new cases per year in women ages 54 and younger.¹ In addition to physical and psychological problems related to treatment, these women often face problems related to sexuality, including body image, and related distress for this problem. Body image concerns in younger women have been attributed to loss of the breast from surgery, resulting scarring, and physical changes resulting from adjuvant treatment, all of which can have an impact on overall quality of life and in particular, body image perceptions in younger women.²

Body image has been referred to as the picture of our own body which we form in our mind, and associated characteristics include expression of emotions, imitation, identification, beauty, and social aspects.³ This construct in the context of breast cancer is multidimensional. Hopwood et al. (2001) identified three areas that are characteristics of the complex concept of body image in women who have been treated for breast cancer. These include the affective (feeling feminine, feeling attractive), behavioral (avoiding people because of appearance), and cognitive (satisfaction with appearance, or with scar).⁴ Han et al. (2010) defined body image after breast cancer to include the characteristics of the mental image of one's body, attitude about appearance and state of health, and sexual functioning.⁵ The theoretical framework developed by Fingeret et al. (2013) is specific to body image in women with breast cancer undergoing reconstruction and includes facets of perception, cognition, behavior, and emotion, as they relate to the function of the body after diagnosis and treatment for breast cancer.⁶

Women with better conceptualization of their body image have been found to cope better with cancer.⁵ Poor body image perceptions have the potential to negatively impact the physical and psychological functioning of the breast cancer survivor and also the well-being of their partnered relationships.⁷ Poorer body image has been linked to greater overall psychological distress in the breast cancer patient⁸ and was previously found to be associated with greater depression and poorer quality of life.⁹

Younger women are often treated for more aggressive breast cancers, requiring more radical surgeries, as well as adjuvant treatments such as chemotherapy and radiation.¹⁰ In the study by Kissane et al. (2004), the researchers found that advanced stage breast cancer patients were more dissatisfied with their body image when compared to early stage breast cancer patients.¹¹ Younger women with breast cancer receiving mastectomy and reconstruction as treatment for breast cancer, which is a more prevalent treatment in the younger population, also report a more negative body image than those receiving breast conserving surgery, such as a lumpectomy, immediately following treatment.^{12,13} Treatment with chemotherapy often results in hair loss, weight gain, and abrupt onset of menopausal symptoms, which are particularly distressing to younger women.¹⁴⁻¹⁶

In terms of physical functioning, a negative body image perception has often been found to be associated with greater sexual difficulties.¹⁷ These difficulties can include hot flashes, vaginal dryness, atrophic vaginitis, and decreased libido, as a result of premature menopause, which can have a particularly negative effect on the sexuality of the younger woman being treated for breast cancer.^{18,19} Women less satisfied with their body image after breast cancer diagnosis are up to 2.5 times more likely to experience sexual functioning

issues, which establishes the importance of addressing both of these topics concurrently.¹⁷ Limiting the focus of sexuality after treatment for breast cancer to sexual functioning alone, as has been the trend in research to date, does not address psychological aspects of sexuality, such as perceptions of body image.²⁰ Although related, body image and sexuality are two distinct concepts that can influence the quality of life of the breast cancer survivor. It has been established that sexuality is an integral part of the overall wellness of an individual, and body image perception is a key component of sexual health.²¹

Adjustments to treatment sequelae can also have an impact on both partner and breast cancer patient, producing physical limitations and negatively impacting body image and sexual functioning in the patient,^{22,23} and higher levels of psychological distress in partners of breast cancer patients.²⁴ Greater partner emotional support has been found to be associated with fewer sexual difficulties after treatment among breast cancer survivors²⁵ and although the literature is scarce related to body image and partnered relationships, one study did find that breast cancer patients who perceived a more positive partnered relationship were more likely to experience better body image.²⁶

There is limited data examining the potential impact of problems related to body image, which may also affect the quality of life of breast cancer survivors. There is the potential for these problems to have the greatest impact on younger women,^{12,13,19,27} a group that is of increasingly greater proportion in the long-term cancer survivor population.²⁸ The objective of this systematic review is to synthesize the current knowledge related to body image, with particular attention paid to the impact of body image disturbance and related distress in younger breast cancer survivors, and to provide directions for future research in this important survivorship area.

Methods

A comprehensive review of the literature was conducted to synthesize evidence in the literature for body image in younger breast cancer survivors, a group particularly at-risk for body image issues after treatment.^{12,13,19,27} The terms “body image,” “sexuality intervention,” “women,” “younger women,” and “breast cancer” were searched in the PubMed, PsycInfo, CINAHL, Web of Knowledge and Science Direct databases from January 2000 through January 2014. The review included articles published starting in the year 2000 in order to establish the current state of the science related to this topic, a key component of which is including those studies that were most recent and examined women treated with the most current treatment modalities. It was not expected that studies published prior to 2000 would provide any further depth to this synthesis of literature. Due to restricted results when focusing only on literature examining younger breast cancer survivors, and finding only fifteen relevant articles, the inclusion criteria were expanded to include all publications that measured body image as an outcome variable in breast cancer survivors and that reported significant outcomes related to age in the survivors. This provided the opportunity for the comparative assessment of younger vs. older women with respect to body image, providing valuable information about this concept in the context of age. For the purposes of this review, “younger women” was subjective based on each study included and for those studies not restricted to only younger women, was defined as any comparison by

age with results reported in the article. Inclusion criteria for this review were as follows: 1) original research; 2) published in English; 3) measuring body image as a primary outcome variable; and 4) results included reporting of age-related outcomes. Articles that were excluded were the following: 1) dissertations, 2) non-research articles, 3) articles that did not measure the concept of body image as a primary outcome variable, 4) meeting abstracts, and 5) articles published prior to 2000. The rationale for this inclusion and exclusion criteria stems from the intent of this systematic review to identify issues related to body image disturbance in younger versus older breast cancer survivors, but also to elucidate from this published literature any other areas of distress that younger women are experiencing as treatment for breast cancer ends and the survivorship period begins.

Data Extraction

Data were extracted from the articles that met inclusion criteria and placed into a summary table (see Table 1). Author C.L.P performed the data extraction process independently. The data in Table 1 is arranged chronologically and then alphabetically by year. The purpose, country of origin, sample size, sample characteristics, study design, study methods, key findings and limitations from each study were documented in this table for further analysis.

Results

Study Selection

A total of 401 potential abstracts were identified for inclusion in this review of the literature (Figure 1). There were 44 studies retrieved from PubMed, 22 from CINAHL, 20 from OVID/PsycInfo, 72 from Web of Knowledge, and 243 from the Science Direct databases. Of these results, 318 were eliminated upon initial abstract review, 245 because they did not meet inclusion criteria and 73 because they were duplicate articles. With 83 articles retrieved for further evaluation, 47 of these were excluded upon article review because they were a review article (1), not breast cancer (2), did not include a measure of body image (8), did not include body image as a primary outcome variable (5), older women only in the study population (2), the study was testing optimal intervention timing (1), the study did not report age-related outcomes (22), or the articles were published prior to 2000 (6). Therefore, the final analysis includes 36 articles that met the inclusion criteria for the purposes of this review (Table 1). Pertinent findings from this synthesis are presented in an integrated manner as they relate to body image in younger women. This first includes a breakdown of the various types of study designs, study countries of origin, and measurement tools used to assess body image to provide a context for the study findings to be presented. Subsequently, pertinent findings from these studies as they relate to body image and age, body image and treatment type, psychological and physical symptoms and body image, sexuality, intimacy, and body image, body image and the partnered relationship, and interventions and their impact on body image are also presented in the context of younger breast cancer survivors.

Characteristics of Included Studies

Study Design—A large portion of the articles included in this synthesis discussed cross-sectional studies, with few intervention studies assessing the impact of an intervention on body image outcomes. Of the 36 included articles, there were 24 cross-sectional

investigations,^{2,7-9,19,26,29-46} five longitudinal studies,⁴⁷⁻⁵¹ three were qualitative explorations,⁵²⁻⁵⁴ two were non-randomized intervention studies^{55,56} and two were randomized controlled trials^{57,58} (Table 1).

Participants—A total of 9,343 breast cancer survivors participated across the studies included in this synthesis. Participants ranged in breast cancer diagnosis from Stages 0 to III and from immediately post-treatment to as many as five years post-treatment. The majority of studies were conducted in the United States ($n = 15$)^{2,7,9,19,31,34,39,42,44,45,47,52,54,55,58} and Europe ($n = 13$)^{26,29,30,33,35,36,38,41,43,48,49,51,57} with the rest being conducted in Australia ($n = 5$)^{8,40,46,50,53} Iran ($n = 2$)^{32,37} and Korea ($n = 1$).⁵⁶

Measurement Tools Used to Assess Body Image—There are a number of measurement tools that have been developed to assess body image, both generally and specifically when it comes to cancer survivors. There was a wide variation in assessment tools used to measure body image in these studies, which included a total of thirteen different instruments (Table 1). Among the most common were the Body Image Scale (BIS) (Cronbach's alpha = 0.93)⁴ which was utilized in four studies,^{7,8,29,38} the European Organization for Research and Treatment of Cancer Breast Cancer-Specific Quality-of-Life Module (EORTC-QLQ-BR23) (Cronbach's alpha 0.70-0.91)⁵⁹ used in three studies,^{9,39,49} the European Organization for Research and Treatment core Quality of Life Questionnaire (EORTC-QLQ-C30), comprised of multiple subscales, one of which assesses body image (Cronbach's alpha 0.52-0.89),⁶⁰ used in one study,⁴⁰ and the Cancer Rehabilitation Evaluation System (CARES) (Cronbach's alpha 0.83),⁶¹ which was used in four studies.^{2,19,31,56} There were also nine studies that utilized investigator-created or aggregated questionnaires specifically developed for their studies,^{33,37,41,42,50,57} three of which were the qualitative studies included in the review.⁵²⁻⁵⁴

Body Image in Younger Breast Cancer Survivors

Body Image and Age—Cancer is generally viewed as a disease of aging, and the diagnosis of breast cancer can be devastating to a young woman.⁶² As a result, younger women are at particular risk for psychological symptoms during and after treatment, including body image issues. In this synthesis of the literature, eleven of the studies evaluated only younger women (Table 1),^{2,7,19,31,32,34,42,43,46,48,53} one of which compared younger women (ages 50 and younger) to healthy controls, finding that there were significantly worse total body image scores among the younger breast cancer survivors ($p < 0.01$).³² Eight of the studies that compared younger women treated for breast cancer to older women treated for breast cancer found that the younger women in the study had worse body image compared to older women.^{8,9,30,38,40,49,51,53} Two studies comparing younger women treated for breast cancer to older women treated for breast cancer did not find a significant difference in body image by age^{44,58} while two other studies found that younger women treated for breast cancer actually had a better body image perception than older women treated for breast cancer.^{45,55}

The remaining 13 studies did not report significant body image findings in younger women, but did report findings unique to younger women that could potentially be influenced by

body image perceptions.^{26,29,33,35-37,39,41,47,52,54,56,57} One qualitative study identified a theme that women wanted age-specific concerns addressed.⁵² Other findings included younger women feeling less comfortable during intimacy,^{36,37} being more concerned about appearance,⁵⁷ being more open to discussions of breast reconstruction,^{33,41} experiencing better outcomes related to body image with breast conserving surgery,^{29,35,39,47} experiencing improved sexual satisfaction with an intervention for sexuality that also addressed body image,⁵⁶ experiencing greater distress related to physical changes due to adjuvant treatment,⁵⁴ and younger age being identified as a predictor of worse body image.²⁶

Body Image and Treatment Type—It is understood that the various treatments for breast cancer that women may have to receive as part of their treatment can result in sudden and bothersome physical changes to the body. Many of the studies in this synthesis had findings related to the impact of treatment on body image, with a number of these findings being unique to younger women, including surgery type, chemotherapy, and radiation. Surgery type was found to have an impact on appearance satisfaction in seven of the studies.^{7,29,31,39,43,47,51} Younger women were found to be more likely to opt for breast reconstruction,^{36,41} women under age 60 that underwent reconstruction were found to have better body image than those under age 60 that did not undergo reconstruction ($p = 0.0192$), but this difference was no longer present in women over 60 years),³⁵ and younger age was found to be significantly associated with a desire for further plastic surgery to improve cosmetic results after breast-conserving surgery ($p < 0.001$).³³ Adjuvant radiation was found to increase body image concerns⁵⁴ and distress in younger women ($p=0.01$),² and chemotherapy treatment was also found to have a negative impact on body image among younger women ($p<0.05$).⁷

Psychological and Physical Symptoms and Body Image in Younger Women—According to the American Cancer Society, most individuals will experience some level of anxiety, fear and depression when cancer becomes a part of their lives, and people who experience physical symptoms associated with their cancer are more likely to experience emotional distress.⁶³ In this synthesis, younger women were found to have higher levels of physical and psychological distress in seven of the studies.^{2,19,34,40,44,49,58}

Body image was found to be associated with both psychological and physical symptoms, including findings that body image concerns were significantly related to the psychological symptoms of anxiety, depression, fatigue and fear of recurrence.^{2,40,44} In a study of women ages 25-50 treated for breast cancer, poorer body image was significantly associated with emotional well-being ($p<.01$), breast cancer-specific concerns, ($p<.0001$), and health related quality of life ($p<.01$).¹⁹ The study by Kenny et al. (2000) had similar findings, in that younger women were found to have poorer emotional functioning ($p=0.0004$), social functioning ($p=0.01$) and global health status ($p=0.05$).⁴⁰ The 2010 longitudinal study by Hartl and colleagues also found that younger patients showed significantly greater impairment in both emotional and social functioning after surgical treatment ($p=0.00$ for both) and that the impairment in emotional functioning was still present at 12 months post-surgery ($p=0.036$).⁴⁹ Younger patients had higher scores for anxiety after primary surgical

treatment ($p=0.016$) than older patients, and the younger patients scores maintained at the same level at the one-year follow-up, while older women anxiety scores went down ($p=0.000$).⁴⁹

In terms of physical symptoms, Rosenberg et al. found greater issues in younger women related to musculoskeletal pain ($p<0.0001$), and the physical changes of weight gain ($p=0.01$) and weight loss ($p=0.02$).² In addition, at baseline and one year, younger patients had more arm complaints ($p=0.002$ T1 and $p=0.038$ T2) and breast complaints ($p=0.014$ T1 and $p=0.001$ T3).² Other studies reported that younger women had decreased physical strength ($p<0.001$)³⁴ and older women experienced greater improvement in strength and health ($p=0.03$).⁵⁸

Body Image and Sexuality—Sexuality, intimacy, and the partnered relationship are often associated with body image concerns in the breast cancer survivor. This was a particularly common finding in this synthesis, with eleven studies reporting these issues.^{7,30,32,34,36,37,40,43,52,56,57} Sexuality, intimacy, and body image concerns were found to be associated with younger age and treatment types received by younger women in this synthesis.

In terms of age, a number of studies identified greater issues related to sexuality and intimacy in younger women who participated. In the study conducted by Andrzejczak and colleagues (2013), 80% of women in the youngest group (34-49) reported covering up their body for aesthetic reasons during intimate relations, while 73% in the middle age group (50-65) and 58% in the oldest (>65) reported the same behavior.³⁰ Younger women were also found to place a greater importance on their breasts in sexuality and femininity ($p=0.009$)⁴⁰ and the study by Fobair and colleagues (2006) found that in women 50 and younger with breast cancer, sexual problems were associated with poorer body image ($p<0.05$).⁷ In a qualitative exploration of African American women, the breast cancer survivors expressed needs for positive body image valuations as well as additional need for information about age-specific concerns related to body image and sexuality for younger women.⁵²

Body Image and the Partnered Relationship—The diagnosis of breast cancer is devastating not only to the younger woman, but also to her partner and the intimate relationship.⁶² Five of the studies in this review also reported findings related to body image and the negative impact it may have on the partnered relationship for younger breast cancer survivors.^{7,26,34,50,53} Premenopausal women were found to have significant concerns related to changes in their relationships ($p<0.001$),³⁴ and women 50 and younger experiencing greater body image concerns were associated with partner difficulty in understanding the feelings of the survivor ($p<0.05$).⁷ King et al. (2000) found that there was a negative impact of mastectomy on body image in married women, particularly younger married women ($p=.0038$).⁵⁰ In a qualitative exploration of this topic among breast cancer survivors ages 50 and younger, participants discussed their body image with respect to femininity and sexuality as a result of surgery, including one participant who expressed issues of body disfigurement because of breast surgery and another talking about her inability to feel desirable towards her husband as a result of breast surgery.⁵³ Patients in a study that included breast cancer

survivors up to age 50 found that those who received a mastectomy have also been found to have a significantly greater concern about sexual role and performance when compared to those who received a lumpectomy ($p < 0.01$).⁴³ In the study by Zimmerman and colleagues (2010), age and male partner relationship satisfaction were found to predict women's body image self-acceptance while age, female relationship satisfaction, and common dyadic coping predicted perceived partner acceptance as an element of body image.²⁶

Intervention Research and Body Image after Breast Cancer—There were four studies in this review that employed an intervention to address various aspects of recovery after breast cancer, including body image concerns.⁵⁵⁻⁵⁸ Two studies utilized an exercise intervention program,^{55,58} another study employed a sexual life reframing program intervention,⁵⁶ and the final utilized a combination of a brief couples and sex therapy intervention.⁵⁷

In the study published by Benton, Schlairet and Gibson (2013), participants were assigned to one of two parallel groups based on age (younger, ages 40-59 and older, ages 60-80).⁵⁵ Participants completed 8 resistance-training exercises two times per week for 8 weeks, and assessments were completed pre- and post-intervention for both groups, with the investigator completing the intervention with participants on a one-on-one basis.⁵⁵ In another study employing an exercise intervention, women were randomly assigned to either a twice-weekly strength training intervention or a control group, with assessments taking place at baseline and again at a 12-month follow-up.⁵⁸ These interventions were instructed by trained fitness professionals for the first 13 weeks, for approximately 90-minute sessions in groups of 2-6 survivors, and then unsupervised exercises continued for the remainder of the 12-month intervention period.⁵⁸ Only one of the studies that employed an exercise intervention reported a statistically significant improvement in body image for younger women compared to older women ($p = .001$),⁵⁵ while the other exercise intervention study found that the intervention participants experienced greater improvement in body image at follow-up than controls ($p < 0.0001$), with no effect found based on age of participants.⁵⁸

In the study of couples after breast cancer, women that underwent a mastectomy and their partners were randomly assigned to either the Combined Brief Psychosexual Intervention (CBPI) group or control group with assessments taking place 2 days prior to the mastectomy and again 3 months post-mastectomy.⁵⁷ All interventions were delivered by the same therapist and consisted of six sessions, with the first taking place in the hospital after the mastectomy and subsequent sessions occurring bi-weekly with the couple and covers topics of communication training, sensate focus, and body imagery.⁵⁷ In the study of a Sexual Life Reframing Program among Korean breast cancer survivors, participants were randomly assigned to the intervention or control groups and completed assessments at baseline and again post-intervention.⁵⁶ The intervention consisted of six weekly 2-hour small group sessions focused on relaxation, problem perception, exposure, problem solving, acceptance, including body image, and reframing, including a reframing of thoughts and feelings about the self and body.⁵⁶ In these remaining two studies, no statistically significant differences were found between the control and intervention groups over time for body image, and also no statistically significant findings specific to age.^{56,57}

Overall, the results of this synthesis found that age and treatment type had a significant impact on body image. In addition, poorer body image was found to have implications related to physical and psychological distress, sex and intimacy, the partnered relationship, and the potential for age to moderate body image in breast cancer survivors. While there were intervention studies found that assessed the impact of an intervention on body image disturbance, only those employing an exercise component to the intervention found a statistically significant improvement in body image as a result of the intervention.

Discussion

This review is the first to synthesize the published literature of body image in younger women after breast cancer treatment. The results of this systematic review demonstrate that body image disturbances are an important survivorship issue after breast cancer and that these issues are often associated with a variety of other distressing psychological, physical, and interpersonal concerns.

It is evident from this review that there is currently a large amount of cross-sectional data available that illustrates body image as a disturbing potential consequence of treatment for breast cancer. Cross-sectional data limits interpretation of the evidence, providing only a pinpoint view of this survivorship issue, and the few studies that performed longitudinal assessments found unresolved issues as long as 12 months post-treatment.⁴⁹ Whether due to younger age or the type of treatments received, there is evidence that body image disturbance is prevalent and often associated with other issues such as sexual functioning in the breast cancer survivor population, and that it is particularly distressing to the younger survivor population.

In order to determine the relationship between treatment regimens and body image and to compare perceptions of body image prior to and after treatment, further research using prospective study designs is recommended. Additionally, interventions to assist with the improvement of these symptoms after treatment would be the next logical step in the progression of research in this area. However, this synthesis showed that the evidence related to interventions for body image in younger breast cancer survivors is limited, as only four studies tested an intervention in the literature review⁵⁵⁻⁵⁸ and of these, only the two that employed an exercise component to the intervention showed any statistically significant differences related to body image.^{55,58} As a result, it would be pertinent to pursue further empirical investigations of interventions that employ an exercise component and to assess the ability of these interventions to improve body image, particularly among younger women after breast cancer treatment. A recent meta-analysis to determine the effects of exercise interventions after treatment for breast cancer also supports this recommendation, finding that exercise interventions significantly improved body image among breast cancer patients, calling for further research into the effect of exercise on stress and the combined effect of behavioral and physical exercise interventions in breast cancer survivors.⁶⁴

Another issue related to the literature review is the wide variation in multiple aspects of the studies included. There was an extensive array of assessment tools used to assess body image, including a number of articles that used questions or assessments developed for that

particular study that had not been tested for their validity or reliability. The use of validated and reliable instruments to empirically measure body image is imperative if progress is to be made in developing a more cohesive understanding of the elements that contribute to this complex survivorship issue. Of the various assessment tools used to assess body image that were identified through this synthesis, the psychometric properties of the Body Image Scale (BIS) and the European Organization for Research and Treatment of Cancer breast cancer-specific quality-of-life module (EORTC-QLQ-BR23) provide support for their consistent use in assessing body image in breast cancer patients. The BIS has a Cronbach's alpha of 0.93 and is a short, ten-item scale developed for use with cancer patients.⁴ The EORTC-QLQ-BR23 is a 23-item scale specific to breast cancer patients that assesses symptoms and side effects related to different treatment modalities, body image, sexuality, and future perspective and the Cronbach's alpha ranges from 0.70-0.91.⁵⁹ It is imperative that valid, reliable measurement tools such as these be used. In order to develop a strong body of evidence related to the impact of body image concerns in breast cancer patients and survivors.

Furthermore, there was a large variation in the time since treatment among these studies, with some assessing women immediately following their treatment, within weeks after, and others assessing women as many as 5 years since treatment. Across these studies, it was found that younger women were still experiencing body image disturbance as well as other distressing symptoms. Finally, generally small sample sizes and limited diversity of the participants in the studies included in this synthesis place further restrictions on the confidence one can have generalizing the results to breast cancer survivors as a whole.

Limitations

This review of literature has some potential limitations. First, the span of publications was limited to the years 2000 – 2014 to target the impact of current treatments related to body image and younger breast cancer survivors in the published literature. There is a chance of “file-drawer” bias, as only published articles were included in the review. In addition, limiting the results to those that included age-related outcomes focused on younger women may potentially bias the results and limit the understanding of the implications of other factors in older women with breast cancer. However, the scope of this review was to identify those age-related outcomes that are unique to or more severe in the younger breast cancer survivor.

Implications for Nursing Research

As discussed, body image is a concept that is part of the overall sexual health, and this is considered one of the aspects of health for any individual.²¹ Through this synthesis, body image concerns have been found to be associated with other physical and psychological symptoms as well as impacting the partnered relationship and sexuality of survivors.

The need for future research is great in this particular area. The smaller sample sizes and wide variation in measurement tools used to assess body image in many of the studies discussed in this synthesis further limit the understanding of body image disturbance across all breast cancer survivors. The design of research that is necessary for the future lies with

rigorously implemented prospective studies and randomized clinical trials. It is important that these trials implement consistent assessment methods targeted at assessing and decreasing the body image disturbance experienced by breast cancer survivors and improving their quality of life and ameliorate these symptoms. In addition, there is a great need for further evaluation of the younger population as a particularly high-risk group of breast cancer survivors who are more likely to manifest body image disturbance issues after treatment.

Although further empirical research is needed in this area, the nurse caring for an individual as they navigate the cancer diagnosis and treatment process is in an ideal situation to conduct an assessment of body image and sexuality concerns and to start an open dialogue regarding these topics. This rapport can make it easier for patients to feel comfortable discussing their concerns related to these sensitive topic areas with the nurse, and in turn, the nurse will be able to provide the patient with resources to help patients better understand and address these concerns after cancer treatment. While the National Cancer Institute acknowledges that further research related to interventions for sexuality and body image is necessary, they have resources available to the nurse that can be used to address and discuss these concerns with breast cancer patients.⁶⁵ This is an important issue in treatment and survivorship care, and one that needs to be addressed with patients on a regular basis throughout the cancer continuum.

Conclusions

Results of this review showed that body image concerns are prevalent among younger women, with treatment type, including greater concerns among survivors related to both surgery types (lumpectomy vs. mastectomy) as well as adjuvant treatment. Younger women also experienced increased levels of physical and psychological symptoms, often unresolved in follow-up treatment. Particularly, issues related to sexuality and intimacy were of great concern to the breast cancer survivor, and evidence that the partnered relationship suffers as a result of body image concerns after breast cancer treatment was also found through this synthesis. Body image disturbance clearly has the potential to cause difficulties in recovery from breast cancer. Younger women are at particularly high-risk for this negative side effect after treatment, both because of their life stage and because of the more aggressive treatments that are often associated with the more aggressive cancers that present in younger women. It is imperative that further research be conducted in this area to improve these symptoms, particularly in the high-risk younger breast cancer survivor population. The review of the literature identified body image disturbance as a significant issue for breast cancer survivors, but further research and well-designed randomized design trials employing validated and reliable measures of body image are necessary to determine which interventions would be most effective in reducing body image disturbance and improving the quality of life of these women as they transition into survivorship.

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Figure 1. Flowchart of Articles for Inclusion in Review

This flowchart details the selection process and offers an explanation of the reasons for excluding articles throughout the process based on the inclusion and exclusion criteria outlined in this integrative review.

Table 1

Summary of Articles Included in Review

This table provides detailed information regarding the sample and methodological characteristics as well as pertinent findings from each article included in this integrative review.

Authors and Date of Publication	Purpose	Country of Origin	Sample Size (N)	Sample Characteristics	Age (Years)		Research Design	Body Image Measure(s)	Findings	Limitations and Potential for Bias
					Mean	Range				
Andrzejczak et al. 2013 ³¹	To assess the impact of undergoing a mastectomy without reconstructive surgery on a patient's psychological state	Europe (Poland)	N=60	Mastectomy due to breast cancer with no subsequent reconstructive surgery	57.9	34-75	Cross-sectional design	Marital Happiness Questionnaire (MHQ)	80% of women in the youngest group (34-49) reported covering up their body for aesthetic reasons during intimate relations, while 73% in the middle age group (50-65) and 58% in the oldest (>65) reported the same behavior.	Self-report measures Cross-sectional design – data collected at only one time point
Benton et al. 2013 ⁵⁶	To evaluate the effect of age on QOL in BC survivors following resistance training	USA	N=20	Assigned to one of two groups based on age (younger: 40-59 years vs. older: 60-80 years)	N/A	40-80	Non-randomized two group Intervention study: 3 sets of 8 exercises twice a week for 8 weeks	Body Image and Relationships Scale (BIRS)	Younger women reported greater improvements than older women in the BIRS total score ($p=.001$) Greater age was associated with greater perceived impairment ($p=.004$).	Self-report measures Non-randomized intervention
Fallbjörk et al. 2013 ³⁷	To explore aspects of body image in women two years after mastectomy due to breast cancer	Europe (Sweden)	N= 76	Women treated with mastectomy Two years post-treatment	59	N/A	Cross-sectional design	Life after Mastectomy Scale (LAM)	Women in this study felt significantly less sexually attractive ($p=.012$) and less comfort during sexual intimacy ($p<.001$).	Self-report measures Cross-sectional design – data collected at only one time point
Lardi et al. 2013 ⁴²	To determine if the minority of patients that undergo mastectomy for invasive breast cancer and opt for delayed breast reconstruction is due to lack of information or the	Europe (Switzerland)	N=101	Primary mastectomy with delayed breast reconstruction	56	37-70	Cross-sectional design	Four multiple choice questions created for this study	Perception of the damage to body image post-mastectomy changed over time (initial diagnosis vs. at time of survey, median 66 months post-op), with women determining	Self-report measures Cross-sectional design – data collected at only one time point Researcher developed instrument

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Authors and Date of Publication	Purpose	Country of Origin	Sample Size (N)	Sample Characteristics	Age (Years)		Research Design	Body Image Measure(s)	Findings	Limitations and Potential for Bias
					Mean	Range				
	fact that women cope well with their altered bodies fact that women cope well with their altered bodies fact that women cope well with their altered bodies								the operation was an acceptable alteration of the body in both those who had breast reconstruction $p > 0.001$) and those without breast reconstruction ($p < 0.001$). Younger patients ($p= .004$) and those that did not have adjuvant chemotherapy ($p= .025$) were more likely to be open to discussions about breast reconstruction Younger age predicted patient's wishes and expectations, expecting more information about breast reconstruction ($p=0.16$)	
Lee et al. 2013 ⁴³	To assess therapy choices and QOL in premenopausal patients treated for non-metastatic breast cancer	USA	N=143	Women 6 months since their last curative treatment; non-metastatic breast cancer	40.4	18-49	Cross-sectional design	The researchers compiled a questionnaire using sections of other well-established questionnaires	Breast conservation surgery had the least interference with appearance ($p<.01$) and work and finances ($p= .02$). Immediate contralateral prophylactic mastectomy carried the highest interference with sexuality compared to no contralateral prophylactic mastectomy or delayed contralateral prophylactic mastectomy ($p=.03$)	Self-report measures Cross-sectional design – data collected at only one time point Researcher developed instrument

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Authors and Date of Publication	Purpose	Country of Origin	Sample Size (N)	Sample Characteristics	Age (Years)		Research Design	Body Image Measure(s)	Findings	Limitations and Potential for Bias
					Mean	Range				
Miller et al. 2013 ⁴⁵	To assess the relationship between age, body image, and emotional distress in women scheduled for breast cancer surgery	USA	N = 80	40 older (≥ 65) vs. 40 younger (<65) women matched on race/ethnicity, marital status, and surgery type	Younger group: 47.8 Older group: 71.9	N/A	Cross-sectional design	Items from the Additional Concerns section of the Functional Assessment of Cancer Therapy – Breast (FACT-B)	Body image did not differ by age ($p>.999$) Age moderated the relationship between body image and emotional distress, but not significantly ($p<.06$).	Self-report measures Cross-sectional design – data collected at only one time point
Przedziecki et al. 2013 ⁸	To test the hypothesis that self-compassion mediates the relationship between body image and distress	Australia	N=279	BCSs	53.4	23-73	Cross-sectional design	Body Image Scale (BIS)	Body image was significantly associated with age ($p=.01$) with younger women reporting more body image disturbance Body image disturbance was found to exert an indirect effect on distress and for anxiety and stress, only self-compassion uniquely contributed to the effect	Self-report measures Cross-sectional design – data collected at only one time point
Rosenberg et al. 2013 ²	To assess body image concerns in young women after diagnosis with breast cancer	USA	N= 419	40 years old or younger Stages 0-III	35.7	17-40	Cross-sectional design	Three items from the psychosocial subscale of the Cancer Rehabilitation Evaluation System (CARES)	Radical surgery was associated with greater concerns related to body image (mastectomy and mastectomy with reconstruction vs. lumpectomy ($p<.0001$)) Also found to be associated with body image concerns were psychological symptoms of anxiety ($p=.0001$), depression ($p<.0001$), fatigue ($p=.04$) and physical symptoms of musculoskeletal pain ($p<.0001$) as	Self-report measures Cross-sectional design – data collected at only one time point

Authors and Date of Publication	Purpose	Country of Origin	Sample Size (N)	Sample Characteristics	Age (Years)		Research Design	Body Image Measure(s)	Findings	Limitations and Potential for Bias
					Mean	Range				
									well as physical changes of weight gain ($p<.01$), as well as physical changes of weight gain ($p<.02$). Adjuvant treatment with radiation was also significantly associated with higher body image concerns ($p=.01$).	
Begovic-Juhant et al. 2012 ⁹	To assess body image, physical attractiveness, and femininity and the effect of these variables on QOL in breast cancer survivors	USA	N = 70	BCSs	49.72	23-79	Cross-sectional design	European Organization for the Research and Treatment of Cancer QOL Questionnaire- Breast Cancer (EORTC QLQ-BR23)	Age was negatively associated with body image, attractiveness, femininity, aversion to nakedness and dissatisfaction with one's body (all $p<.01$). Overall, 30% of the study participants were "very dissatisfied" with their body image and 47% were either a little or quite a bit dissatisfied with their body image.	Self-report measures Cross-sectional design – data collected at only one time point
Befort & Klemp 2011 ³⁵	To examine the physical and psychosocial effects of breast cancer experienced by rural survivors at the time of treatment and currently to examine differences in these effects between younger and older rural survivors based on menopausal status at diagnosis	USA	N = 770	Rural women treated for breast cancer within 6 years of the on-study date	67	N/A	Cross-sectional design	Breast Cancer Prevention Trial Symptom Checklist (BCPT)	Common concerns among premenopausal respondents were fear of recurrence, decreased physical strength, change in body image, change in relationships and financial stress (all $p<.001$).	Self-report measures Cross-sectional design – data collected at only one time point
Jun et al. 2011 ⁵⁷	To investigate the effect of a sexual life reframing program on marital	Korea	N = 45	Married Korean women diagnosed with stages I-III BC that received chemotherapy	Intervention: 45.7 Control: 46.2	30-59	Quasi-experimental design Intervention vs. control group Intervention consisted of 6 sessions with physical and psychological	Cancer Rehabilitation Evaluation System (CARES)	No statistically significant differences for body image were found	Non-randomized intervention Self-report measures

Authors and Date of Publication	Purpose	Country of Origin	Sample Size (N)	Sample Characteristics	Age (Years)		Research Design	Body Image Measure(s)	Findings	Limitations and Potential for Bias
					Mean	Range				
	intimacy, body image, and sexual function among BCSSs intimacy, body image, and sexual function among BCSSs intimacy, body image, and sexual function among BCSSs intimacy, body image, and sexual function among BCSSs			within the past 1-5 years; ages 30-59 living with their husbands			components related to sexual function. 6 weekly 2-hour sessions.		between the intervention and control group. Only the change in sexual satisfaction was significantly greater in the intervention group ($p < 0.001$).	
Sayakhot et al. 2011 ⁴⁷	To examine menopausal symptoms, psychological function, sexual function, and body image in younger Australian women and the effect of different breast cancer treatments on these parameters	Australia	N=114	Non-metastatic breast cancer Ages 40-51	47.2	40-51	Cross-sectional design	The Multidimensional Body Self-Relations Questionnaire (MBSRQ)	In the multidimensional assessment of body image, appearance evaluation ($p=.008$), appearance orientation ($p=.031$), health evaluation ($p=.008$), illness orientation ($p=.018$), overall appearance ($p=.0001$), and body satisfaction ($p=.014$) were all significantly lower in women who had received an ovariectomy than women without an ovariectomy.	Self-report measures Cross-sectional design – data collected at only one time point
Schnur et al. 2011 ⁵⁵	To understand the impact of skin toxicity on QOL	USA	N=20	Stages 0-III During last week of external beam radiotherapy	60	38-84	Qualitative design	Focused questions asked during semi-structured interviews	Results found that generally women who were younger and more invested in their appearance were more distressed by skin toxicity due to radiotherapy.	Potential for interviewer bias with qualitative design Researcher developed questions
Bakhti & Najafi 2010 ³³	To study the disease of breast cancer and it's consequences in the younger group	Iran	N = 20	Ages 50 and younger vs. healthy controls	N/A	35-50	Cross-sectional design	The Multidimensional Body Self-Relations Questionnaire (MBSRQ)	There were significant differences between breast cancer and healthy controls in sexual desire ($p<.01$), sexual arousal ($p<.01$), and sexual satisfaction ($p<.01$). There were significant	Self-report measures Cross-sectional design – data collected at only one time point

Authors and Date of Publication	Purpose	Country of Origin	Sample Size (N)	Sample Characteristics	Age (Years)		Research Design	Body Image Measure(s)	Findings	Limitations and Potential for Bias
					Mean	Range				
									differences between the two groups regarding total body image scores (Pateras et al. 2010) ⁴⁹	
Biglia et al. 2010 ⁴⁹	To evaluate the impact of breast cancer treatment on sexual functioning, cognitive function, and body weight in premenopausal women	Europe (Italy)	N = 35	Premenopausal women	45.7	40-50	Longitudinal design Assessments occurred: 1) after surgery; 2) after chemotherapy or endocrine therapy; and 3) after 1 year	Body Attitude Test (BAT)	Scores on the BAT subscales “attention to body size” and “comparison of body appearance” increased at T2 ($p >0.05$) and a further increase at T3 ($p > 0.05$). The “familiarity with the body” improved as indicated by the decreased mean score, but was not statistically significant.	Self-report measures
De Gournay et al. 2010 ⁵⁶	To evaluate the impact of the autologous latissimus dorsi procedure on QOL and body image in women who had a mastectomy for breast cancer	Europe (France)	N = 193	Reconstruction vs. no reconstruction	55	33-74	Cross-sectional design	The Michigan Breast Reconstruction Outcome Study Body Image Questionnaire (MBROS-BI)	Those less than 60 years of age with reconstruction had better body image than those without reconstruction ($p = .0192$) – this difference was no longer present in women over 60 years old	Self-report measures Cross-sectional design – data collected at only one time point

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Authors and Date of Publication	Purpose	Country of Origin	Sample Size (N)	Sample Characteristics	Age (Years)		Research Design	Body Image Measure(s)	Findings	Limitations and Potential for Bias
					Mean	Range				
Elmir et al. 2010 ⁵⁴	To explore younger women's experiences of recovery from breast cancer-related breast surgery and to contribute to the knowledge base for clinicians practicing in this field	Australia	N = 4	Age 50 and younger Diagnosed with breast cancer that resulted in breast surgery	39.5	31–42	Phenomenological qualitative design	Focus group questions	Participants talked about their body image with respect to femininity and sexuality as a result of surgery, including one participant that expressed issues of body disfigurement because of breast surgery and another talking about her inability to feel desirable towards her husband as a result of breast surgery.	Potential for interviewer bias with qualitative design Researcher developed questions
Hartl et al. 2010 ⁵⁰	To assess long-term QOL and other factors in survivors of breast cancer	Europe (Germany)	N=236	Primary diagnosis of breast cancer or DCIS	58.7	33–89	Longitudinal Design Completed questionnaires after surgical treatment, again 6 months and 12 months post-surgery	European Organization for the Research and Treatment of Cancer QOL Questionnaire- Breast Cancer (EORTC QLQ-BR23)	In comparing younger (less than 60 years old) vs. older (60 and older) women, younger patients showed greater impairment in role functioning than older patients ($p=.000$ T ₁ and $p=.036$ T ₃) greater impairment in emotional functioning ($p=.000$ T ₁ and $p=.003$ T ₃) greater impairment of cognitive functioning ($p=.001$ T ₁ and $p=.006$ T ₃) and greater impairment in social functioning ($p=.000$ T ₁) Younger patients had higher scores for anxiety after primary surgical treatment ($p=.016$) than older patients, and the younger patients scores maintained at the	Self-report measures

Authors and Date of Publication	Purpose	Country of Origin	Sample Size (N)	Sample Characteristics	Age (Years)		Research Design	Body Image Measure(s)	Findings	Limitations and Potential for Bias
					Mean	Range				
									same level at the one-year follow-up, while older women anxiety scores were not significantly different	anxiety scores were not significantly different
									same level at the one-year follow-up, while older women anxiety scores were not significantly different	anxiety scores were not significantly different
									same level at the one-year follow-up, while older women anxiety scores were not significantly different	anxiety scores were not significantly different
									same level at the one-year follow-up, while older women anxiety scores were not significantly different	anxiety scores were not significantly different
Moreira & Canavarro 2010 ⁵²	To examine the evolution of body image dimensions from the period of surgery to 6 months after treatment ending among breast cancer patients	Europe (Portugal)	N = 56	BCSs	52.39	37-68	Longitudinal design t1 – surgery t2 – 6 months after completion of adjuvant treatment	Derriford Appearance Scale (DAS)	Significant increase in body shame over time ($p=.002$). Significant associations between age and self-consciousness of appearance ($p=.03$); surgery type and body shame ($p=.01$) and surgery and appearance satisfaction ($p=.01$).	Self-report measures
Speck et al. 2010 ⁵⁹	To evaluate the impact of a twice-weekly strength training program intervention on perceptions of body image in breast cancer survivors	USA	N = 234	Women treated for non-metastatic breast cancer 1 year prior to study enrollment, currently cancer-free with BMI 50 kg/m ²	56.6	36-80	RCT 1 year weightlifting intervention vs. waitlist control Baseline and 12 month follow-up assessments	Body Image and Relationships Scale (BIRS)	Baseline BIRS score of women lost to follow-up differed significantly from those that had complete follow-up ($p < 0.03$) with those lost to follow-up scoring with higher impairment Intervention participants experienced greater improvement on the BIRS at follow-up than controls ($p < 0.0001$) The interaction between age and treatment allocation was significant, with older women experiencing greater improvement in strength and health ($p = 0.03$). The main effect of age was not significant.	Self-report measures

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Authors and Date of Publication	Purpose	Country of Origin	Sample Size (N)	Sample Characteristics	Age (Years)		Research Design	Body Image Measure(s)	Findings	Limitations and Potential for Bias
					Mean	Range				
Zimmerman et al. 2010 ²⁶	To examine the individual and dyadic predictors of body image in women diagnosed with breast cancer	Europe (Germany)	N = 98	Women with early stage breast cancer and their partners	Women: 51.9 Men: 53.1	Women: 30-78 Men: 25-80	Cross-sectional design	Self Image Scale (SIS)	Depression scores, age and male relationship satisfaction were found to predict women's body image self-acceptance Age, female relationship satisfaction, and common dyadic coping predicted perceived partner acceptance as an element of women's body image	Self-report measures Cross-sectional design – data collected at only one time point
Chung et al. 2009 ²⁵	To determine the utility and cultural relevance of the taking CHARGE breast cancer survivorship program for African American women	USA	N=13	Age 25 years or older Self-identified as African-American Completed primary treatment 2 to 12 months earlier	56	41-72	Qualitative design	Focus group questions	African American women expressed needs for positive body image valuations as well as additional need for information about age-specific concerns related to body image/sexuality for younger women	Potential for interviewer bias with qualitative design Researcher developed questions
Bani et al. 2008 ³⁴	To evaluate correlates for the patient's desire for surgical improvement of the cosmetic outcome after the primary operation for breast cancer	Europe (Germany)	N = 684	Diagnosis of breast cancer at least 6 months prior to completing the survey Split into two groups: desire for reconstruction vs. no desire for reconstruction	Desire for reconstruction: 48.9 No desire for reconstruction: 55.3	N/A	Cross-sectional design	A measure designed by the research team consisting of 80 multiple choice questions, including content asking about body image	Age was associated with the desire for improvement in cosmetic results (<i>p</i> < 0.001), with women who wanted improvement being about 6 years younger on average.	Self-report measures Cross-sectional design – data collected at only one time point
Garrusi et al. 2008 ³⁸	To identify sexual dysfunction and related factors in Iranian women after a diagnosis of breast cancer	Iran	N = 82	Average time since treatment 2.5 years Iranian women	49.9	N/A	Cross-sectional design	A measure designed by the research team to assess body image perceptions	In comparison with before breast cancer diagnosis, 72% of respondents reported decreased orgasm and this was significantly associated with age, type of treatment, body image	Self-report measures Cross-sectional design – data collected at only one time point

Authors and Date of Publication	Purpose	Country of Origin	Sample Size (N)	Sample Characteristics	Age (Years)		Research Design	Body Image Measure(s)	Findings	Limitations and Potential for Bias
					Mean	Range				
									perception, and perceived husband's attitude (significance levels not reported)	
									perception, and perceived husband's attitude (significance levels not reported)	
									perception, and perceived husband's attitude (significance levels not reported)	
									perception, and perceived husband's attitude (significance levels not reported)	
									Body image perception was also significantly related to sexual satisfaction (significance level not reported)	
Hopwood et al. 2007 ³⁹	To investigate the effects on QOL of age, time since surgery, type of breast surgery, chemotherapy and endocrine therapy	Europe (United Kingdom)	N = 2208	BCSs	56.9	26-87	Cross-sectional design	The Body Image Scale (BIS)	Age had significant effects on QOL; women ages <50 had worse QOL in respect to body image ($p< .001$)	Self-report measures Cross-sectional design – data collected at only one time point
Kalaizizi et al. 2007 ⁵⁸	To assess the impact of a brief couples and sex therapy intervention on psychological well-being of patients and their partners	Europe (Greece)	N = 40	Women that underwent simple mastectomy for in situ primary breast cancer without adjuvant treatment	Intervention:51.8 Control: 53.25	N/A	RCT Intervention vs. control group The intervention consists of six therapeutic sessions held on a biweekly basis starting with when the patient is still in the hospital (Combined Brief Couples and Sex Therapy)	Researcher-developed questionnaire assessing sexuality and body image	Age was significantly correlated with orgasm frequency and satisfaction with body image when dressed ($p<0.001$).	Self-report measures
Fobair et al. 2006 ⁷	To determine the frequency of body image and sexual problems in younger women with breast cancer in the months post-treatment	USA	N = 546	Age 50 or younger in a stable relationship	N/A	22-50	Cross-sectional design	3 items from the Body Image Scale (BIS)	Greater body image concerns were associated with mastectomy and possible reconstruction, hair loss after chemotherapy, weight gain or loss concerns, poorer mental health, lower self-esteem, and partner difficulty in understanding the feelings of the survivor (all $p<.05$). Sexual problems were associated with poorer body image ($p<.05$).	Self-report measures No information about validation of only using a portion of a validated scale Cross-sectional design – data collected at only one time point

Authors and Date of Publication	Purpose	Country of Origin	Sample Size (N)	Sample Characteristics	Age (Years)		Research Design	Body Image Measure(s)	Findings	Limitations and Potential for Bias
					Mean	Range				
<i>a</i> Avis et al. 2005 ²⁹	To describe quality of life (QOL) of younger women after breast cancer diagnosis and to identify factors associated with impaired QOL	USA	N = 202	Stage I-III Women 25-50 years old at diagnosis 4-42 months post-diagnosis	43.5	25-50	Cross-sectional	Items from the psychosocial subscale of the Cancer Rehabilitation Evaluation System (CARES)	Poorer body image was significantly associated with emotional well-being ($p<.01$), breast cancer-specific concerns, ($p<0.0001$), and health related QOL ($p<.01$)	Self-report measures Cross-sectional design – data collected at only one time point
Janz et al. 2005 ⁴⁰	To examine the relationship between cancer stage, surgical treatment type and chemotherapy on WOL as well as if sociodemographic characteristics modify these relationships	USA	N=1357	Stages 0-II	60	27.9-79.9	Cross-sectional	European Organization for the Research and Treatment of Cancer QOL Questionnaire- Breast Cancer (EORTC QLQ-BR23)	Differences in QOL by surgical treatment were found; women receiving a mastectomy with reconstruction had significantly poorer body image vs. those receiving breast conserving surgery ($p<.001$) Younger women reported lower QOL scores for 7 of 9 QOL dimensions	Self-report measures Cross-sectional design – data collected at only one time point
Mahapatro et al. 2005 ⁴⁴	To explore the various concerns of mastectomized vs. lumpectomized patients	Europe (United Kingdom)	N = 75	Women diagnosed with breast carcinoma 6 months to 1 year post-operative	42	18-50	Cross-sectional design	Concerns and Coping Checklist by Devlen	Body image and disfigurement was of greater concern in the mastectomy group ($p <0.01$) Mastectomy patients had a significantly greater concern about sexual role and performance ($p <0.01$)	Self-report measures Cross-sectional design – data collected at only one time point
<i>a</i> Avis et al. 2004 ³²	To examine the particular issues faced by younger women diagnosed with breast cancer	USA	N = 204	BCSs age 50 years and younger	43.45	25-50	Cross-sectional design	Items from the psychosocial subscale of the Cancer Rehabilitation Evaluation System (CARES)	77% of women reported unhappiness with their appearance Weight gain was reported as at all bothersome by 52% of women Women receiving a mastectomy or a mastectomy with	Self-report measures Cross-sectional design – data collected at only one time point