

# Body Image and Breast Cancer: A Systematic Review

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## Abstract

This systematic review aimed to synthesize the existing literature on body image dissatisfaction among women undergoing breast cancer treatment, its prevalence, associated factors, and potential interventions. A comprehensive search was conducted in multiple electronic databases up to April 2023. This systematic review identified 194 articles initially, with 168 unique articles remaining after removing duplicates. After screening titles and abstracts, 107 articles were excluded based on eligibility criteria, leaving 61 articles for further evaluation. Finally, 14 studies were included in the qualitative synthesis after excluding 47 articles. A total of 14 studies met the inclusion criteria, involving 1,031 female breast cancer survivors undergoing active treatment or follow-up care. The studies utilized cross-sectional, cohort, qualitative, and interventional designs. Body image dissatisfaction was measured using validated scales, and statistical analyses included bivariate and multivariate approaches.

The studies included female breast cancer survivors aged 18 to 75 years, who had undergone breast cancer treatment and were either undergoing active treatment or in follow-up care. Participants were excluded if they were male, non-breast cancer populations, had not received any form of breast cancer treatment, or were diagnosed with metastatic breast cancer. Studies not published in English were also excluded from this systematic review. The prevalence of body image dissatisfaction ranged from 56.8% to 92%. Significant associations were found with receiving multi-professional follow-up and returning to employment after treatment. Factors such as surgical procedures, chemotherapy, time since treatment completion, dispositional gratitude, and coping strategies influenced body image perceptions. The review highlights the impact of body image dissatisfaction on various aspects of quality of life and calls for the implementation of interventions to improve the well-being of breast cancer survivors. Future research should focus on culturally tailored approaches to address this concern effectively.

**Keywords:** body image dissatisfaction, breast cancer treatment, quality of life, psychological distress, breast cancer survivors, personalized interventions, psychosocial well-being, positive body image experiences, systematic review.

## 1. Introduction and Background

Body image concerns among women with breast cancer have gained significant attention in recent years, owing to their profound impact on psychological well-being and overall quality of life. The diagnosis and treatment of breast cancer often bring about significant changes in a woman's physical appearance, including alterations in breast shape, size, and symmetry (Feng et al., 2018). These changes can profoundly

affect body image perception, leading to various emotional and psychosocial challenges (Erturhan Turk & Yilmaz, 2018).

This review aims to provide a comprehensive summary of the existing literature on the prevalence of body image issues among women who have experienced breast cancer. By examining and analyzing a range of studies, this review aims to shed light on the multifaceted nature of body image concerns in this population, identifying individual and contextual factors contributing to their development and maintenance (Ramdhani et al., 2014).

Research indicates that a substantial proportion of women with breast cancer experience body image dissatisfaction, with prevalence rates varying across studies. Factors such as age, disease stage, treatment modality, and time since diagnosis have been found to influence the prevalence and severity of body image concerns (Morales-Sánchez et al., 2021). Younger women, for instance, often report higher levels of distress related to changes in body image, possibly due to societal expectations regarding femininity and attractiveness (Brunet et al., 2022). Additionally, women who have undergone more extensive surgical procedures, such as mastectomy or breast reconstruction, may encounter specific challenges related to body image and self-perception (Kocan & GURSOY, 2016).

Moreover, this review seeks to explore various factors contributing to developing and maintaining body image concerns among women with breast cancer. These factors include individual characteristics, such as self-esteem, personality traits, and coping strategies, and external influences, such as societal norms, media representations, and social support systems (Tsai et al., 2021). Understanding these multifactorial influences is crucial for identifying potential targets for intervention and support aimed at improving body image and overall well-being among women affected by breast cancer.

The implications of body image concerns in the context of breast cancer extend beyond the immediate psychological impact. Studies have consistently demonstrated that body image dissatisfaction is associated with decreased quality of life, increased psychological distress, and reduced sexual functioning (Liu et al., 2022). Furthermore, body image concerns may contribute to treatment non-adherence, reduced engagement in physical activity, and impaired social interactions (Browall et al., 2016). By synthesizing the existing literature, this review aims to provide valuable insights into the far-reaching consequences of body image issues among women with breast cancer, highlighting the importance of addressing these concerns within a comprehensive cancer care framework.

In conclusion, this review aims to consolidate the current knowledge regarding body image concerns among women with breast cancer. By examining the prevalence rates, identifying influential factors, and exploring the implications of body image issues, this research seeks to better understand the complex interplay between breast cancer, body image, and psychological well-being. The findings from this review have the potential to inform the development of targeted interventions, support programs, and psychosocial interventions that can help improve the overall quality of life for women facing the challenges of breast cancer treatment and survivorship.

## 1.1 Rationale

The rationale for conducting a review on body image concerns among women with breast cancer is grounded in the existing knowledge and understanding of this topic. Previous research has provided insights into the profound impact that breast cancer and its treatments can have on a woman's body image and overall well-being. However, there is still a need for a comprehensive synthesis of the existing

literature to better understand the prevalence, factors, and implications of body image issues in this population (Morales-Sánchez et al., 2021).

Existing studies have highlighted that body image concerns are prevalent among women with breast cancer, but the exact prevalence rates and the factors that contribute to these concerns may vary across studies (Guedes et al., 2018). By conducting a systematic review, researchers can critically analyze and summarize the findings from a range of studies, thereby identifying common trends, inconsistencies, and gaps in the literature (Paré & Kitsiou, 2017). This review can provide a more comprehensive and nuanced understanding of the prevalence of body image issues among women with breast cancer.

Furthermore, understanding the implications of body image concerns is crucial for providing comprehensive care to women with breast cancer (Rezaei et al., 2016). Previous research has linked body image dissatisfaction to decreased quality of life, heightened psychological distress, and impaired sexual functioning (Thakur et al., 2022). It has also been associated with treatment non-adherence, reduced engagement in physical activity, and compromised social interactions (Phillips et al., 2020). By summarizing the literature, the review can provide valuable insights into the broader consequences of body image issues in this population, highlighting the need for interventions and support programs that address these concerns (Hosseini & Padhy, 2019).

In summary, the rationale for conducting a review on body image concerns among women with breast cancer stems from the existing knowledge, which indicates the significance of this issue for their psychological well-being and quality of life. By consolidating the findings from previous studies, the review aims to enhance our understanding of the prevalence, influential factors, and implications of body image concerns in this specific population. The primary objective is to actively contribute to the development of tailored interventions and support methods that can effectively address the specific needs and concerns related to body image experienced by women affected by breast cancer.

## 1.2 Objective

The following explicit statement addresses the key questions being addressed in the review of body image concerns among women with breast cancer, including details about participants, interventions, comparisons, outcomes, and study designs:

**Participants:** The review focuses on women who have been diagnosed with breast cancer, regardless of their age, disease stage, or treatment modality.

**Interventions:** The review examines various factors that influence body image concerns among women with breast cancer. These factors may include surgical interventions (e.g., mastectomy, breast reconstruction), adjuvant therapies (e.g., chemotherapy, radiation), and psychosocial support interventions.

**Comparisons:** The review seeks to compare the prevalence of body image concerns among women with breast cancer across different participant characteristics, such as age groups, disease stages, treatment modalities, and time since diagnosis.

**Study Designs:** The review includes a comprehensive range of study designs, including cross-sectional studies, longitudinal studies, observational studies, qualitative studies, and randomized controlled trials (RCTs). The inclusion of various study designs enables a comprehensive understanding of the prevalence, factors, and implications of body image concerns in women with breast cancer.

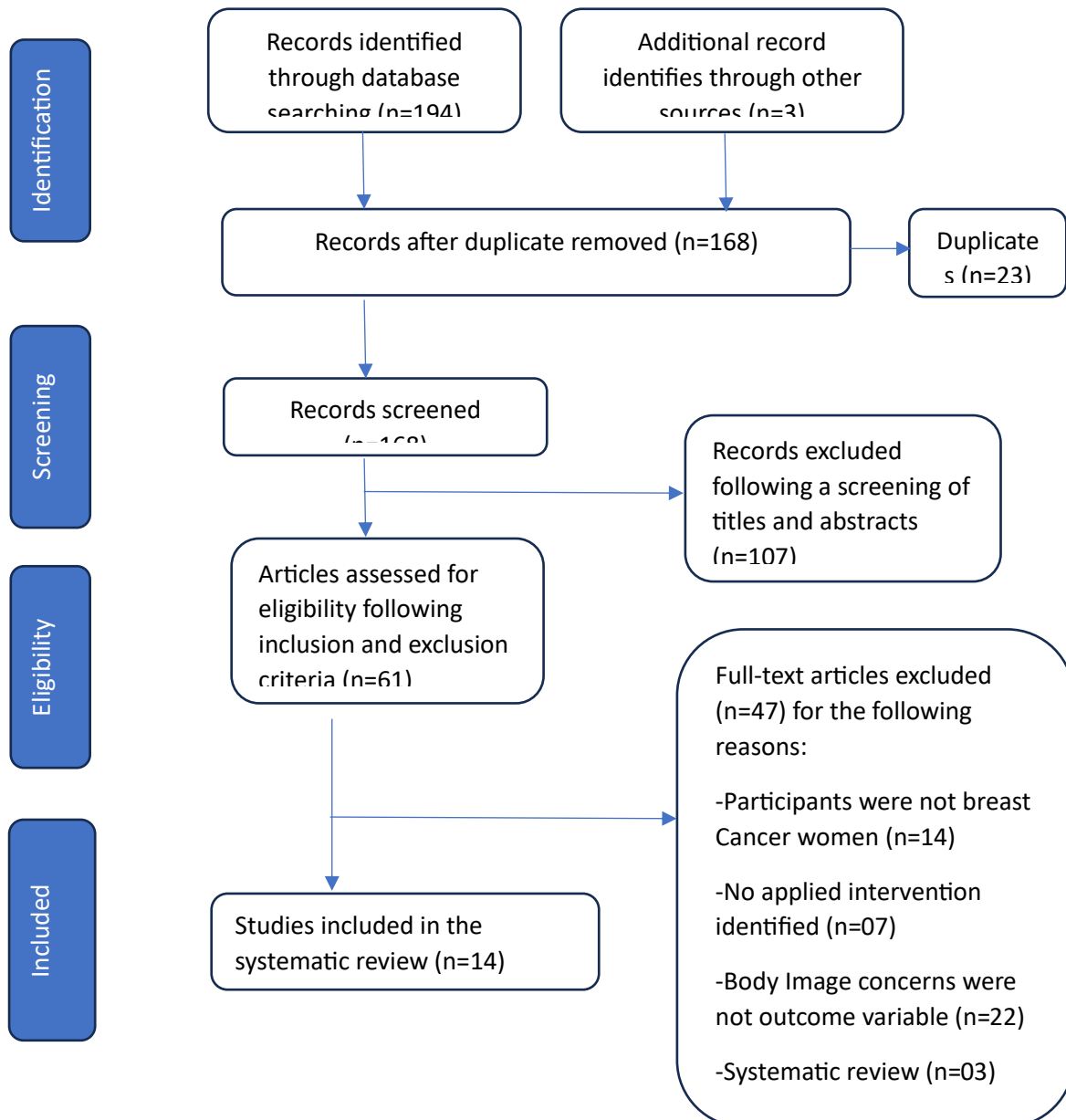
By addressing these key questions and considering participants, interventions, comparisons, outcomes, and study designs, the review aims to provide a comprehensive synthesis of the existing literature on body image concerns among women with breast cancer.

## 2. Methodology

### 2.1 Data sources and search strategy

This systematic review adhered to the guidelines set forth by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) statement, which offers a rigorous framework for conducting scientific research in the form of systematic reviews. The PRISMA statement comprises a comprehensive 27-item checklist and a four-phase Flow Diagram (refer to Figure 1), aimed at enhancing the quality and transparency of reporting in systematic reviews and meta-analyses. By following these guidelines, authors can ensure a meticulous and standardized approach to their research process.

Flow Chart



To identify relevant studies on body image concerns among women with breast cancer, an extensive search was conducted across several databases, including Web of Science (WOS), Scopus, PubMed, PsycINFO, and PsychArticles. The search utilized a combination of keywords and Boolean operators, specifically focusing on terms such as "Breast Cancer" or "Breast Cancer Women," "Body image," "Psychosocial" and "Social". The search encompassed articles available from the inception of the databases until April 19th, 2023, with restriction to the last five years of publication. However, language restrictions were applied, with a focus on English publications. The screening process involved reviewing titles, abstracts, and full manuscripts to determine their eligibility for inclusion in the present review.

**Table No 1. Search strategies used**

Database	Search Strategies
Cochrane	((“Breast Cancer” OR “Breast Cancer Women”) AND “Body image” AND (“Psychosocial” OR “Implication”)) Filters: English Results: 19 records
PubMed	((“Breast Cancer” OR “Breast Cancer Women”) AND “Body image” AND (“Psychosocial” OR “Implication”)) Filters: English Results: 60 records
PsycINFO	((“Breast Cancer” OR “Breast Cancer Women”) AND “Body image” AND (“Psychosocial” OR “Implication”)) Filters: English Results: 15 records
Wiley	((“Breast Cancer” OR “Breast Cancer Women”) AND “Body image” AND (“Psychosocial” OR “Implication”)) Filters: English Results: 74 records

**2.1.1 Study Design:** Only original research studies will be included, such as cross-sectional studies, cohort studies, case-control studies, or randomized controlled trials. Review articles, case reports, editorials, and conference abstracts will be excluded.

**2.1.2 Population:** The target population should include women diagnosed with breast cancer and undergoing treatment, including surgery, chemotherapy, and/or radiation therapy. Studies focusing on women with metastatic breast cancer should be excluded. There are no restrictions on age or race/ethnicity.

**2.1.3 Outcome Measures:** Studies should assess body image and quality of life as primary or secondary outcomes. Measurements include validated scales, questionnaires, or qualitative interviews exploring body image perception, body satisfaction, psychological distress, social support, illness perception, happiness, self-esteem, optimism, adaptive coping, or mental adjustment.

**2.1.4 Language:** Studies published in English or with an English translation will be included to ensure accessibility and understanding of the findings.

For characteristics of included studies (see Appendix 1)

**2.2 Eligibility Criteria**

The information sources used in the survey to identify relevant studies for the systematic review may include the following:

Databases: PubMed, MEDLINE, Scopus, Embase, PsycINFO, Web of Science, and other relevant databases. The dates of coverage may vary for each database but typically span from the year 2018 to the present, to cover the last five years of research. The last search for relevant studies was conducted on the 5th of May. It's important to note that additional searches may be conducted closer to the publication date depending on the specific systematic review process to ensure the most up-to-date and comprehensive literature review.

PICOS Analysis for inclusion-exclusion Criteria

**Table No 2. PICOS: Participants, Interventions, Comparisons, Outcomes, and Study Design.**

	P	I	C	O	S
I	Women with BC (early diagnosed, in treatment or long-term patient, survivors)	Psychological, physical, spiritual, beauty care, intimacy Surgery interventions	CG or comparison between pre-post after intervention in the IG	Implication of illness on body image	An experimental and quasi-experimental design with pre-post measures
E	Participants with other type of cancers, or other illnesses	Intervention apart from those related to the illness	No results of comparisons	Other outcomes BI separately with other outcomes	Observational, comparative, and validation scale studies/Systematic reviews/Meta-analyses/Clinical guides/Study protocols

Notes: I (Include); E (Exclude); BC (breast cancer); BI (body image).

The review included full-text research articles in English that met specific criteria. The population studied had to be women with breast cancer, and the articles had to examine body image as an outcome variable. Additionally, the articles needed to involve an implication of body image. Excluded were articles in languages other than English, studies focusing on populations other than women with breast cancer, articles not using body image and psychosocial effects as dependent variables, those without identified interventions, and certain types of literature such as systematic reviews, books, and unpublished articles. These criteria were applied to ensure the selection of relevant articles for the review.

**3. Result**

**3.1 Findings**

After conducting the search, 194 articles were initially identified. However, 23 of these records were duplicates, leaving a total of 168 unique articles. After reviewing the titles and abstracts, 107 articles were excluded based on the eligibility criteria. From the remaining pool, 61 articles met the criteria for further evaluation. Among them, 47 articles were subsequently excluded, resulting in a final selection of 14 studies for inclusion in the qualitative synthesis.

Table No 3. Characteristics of included studies

Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
Prevalence of Body Image Dissatisfaction and Associated Factors in Women Undergoing Breast Cancer Treatment	Cross-sectional design	Body image dissatisfaction among women who had undergone breast cancer treatment.	The study involved 103 female residents of Natal, a municipality in Northeast Brazil, who had been diagnosed with breast cancer and had received cancer treatment for a minimum of 12 months prior to the study. The participants remained under clinical monitoring during the study.	Body image was measured using the validated Body Image Scale (BIS). In addition to assessing body image, the study also collected data on socioeconomic variables and clinical history through individual interviews with the participants.	Bivariate analysis was conducted using Pearson's chi-squared test (or Fisher's exact test when applicable) to examine the associations between body image and various factors. Prevalence ratios with 95% confidence intervals were calculated. Multivariate analysis was performed using Poisson regression with robust variance. The statistical significance	The study found that the prevalence of body image dissatisfaction among the participants was 74.8% (95% CI: 65%-82%). Significant associations were observed between body image and receiving multi-professional follow-up (p=0.009) as well as returning to employment after treatment (p=0.022).

Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
					α threshold was set at 0.05.	
Relationship Between Body Image and Quality of Life Among Breast Cancer Survivors in China: A Cross-Sectional Study	Cross-sectional design	Body image dissatisfaction among women who had undergone breast cancer treatment.	The study included 354 breast cancer survivors recruited through convenience sampling. Approximately half of the participants (50.28%) resided in rural areas.	The participants completed two validated questionnaires: the Body Image Self-Rating Questionnaire for Breast Cancer and the 36-item Short-Form Health Survey. Additionally, demographic and clinical covariates were assessed through supplemental questions.	Multiple linear regressions were conducted to analyse the relationship between body image and different domains of QoL. The potential moderating effect of rural-urban residence was examined	After adjusting for demographic and clinical variables, the study found that a better perception of body image-related sexual activity change, role change, and psychological change was significantly associated with improved physical and mental well-being. A better perception of body image-related social and behaviour change was



Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
						only significantly associated with better mental well-being. The association was stronger in urban subjects compared to rural subjects.
Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
Impact of Breast Cancer Treatments on the Quality of Life of Non-Metastatic Breast Cancer Survivors One Year After Surgical Treatment: A Cross-Sectional Study in Greece	Cross-sectional design	Body image dissatisfaction among women who had undergone breast cancer treatment.	The study included a sample of 200 female breast cancer survivors aged 18 to 75 who were being followed up as outpatients in five public hospitals.	Participants completed the EORTC QLQ-C30 and BR23 questionnaires to collect QoL data. Multiple linear regression analysis was used to examine the associations between demographic and clinical variables and QoL outcomes.	Multiple linear regression was used to investigate the relationship between the sub-scales of the two questionnaires with demographic factors.	The reliability of the questionnaires was found to be very good, with Cronbach's alpha ranging from 0.551 to 0.936 for all scales. Older patients had a lower future perspective, and those residing in

Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
						<p>rural areas experienced more financial difficulties. Patients with tertiary education and those treated in a university hospital reported better global health status. Patients who underwent chemotherapy had better emotional function scores. Women who had breast reconstruction and experienced complications had significantly better scores in future perspective</p>

Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
						and social function.
Pre-operative and Early Postoperative Health-Related Quality of Life of Women with Breast Cancer: A Prospective Study in Lebanon	A cohort study was conducted	This prospective study aimed to evaluate the Health-Related Quality of Life (HRQoL) of Lebanese women with breast cancer before and after breast-conserving surgery, with a specific focus on changes in body image.	The study included 120 newly diagnosed breast cancer patients in Lebanon.	Sociodemographic and clinical data were collected, and HRQoL was evaluated using the EORTC QLQ-C30 and QLQ-BR23 questionnaires. Measurements were taken at baseline, one day after breast surgery, and just prior to the initiation of adjuvant therapy.	Paired T-Test	The results showed a statistically and clinically significant decrease in body image, physical functioning, and emotional functioning after breast surgery. The mean differences in body image, physical functioning, and emotional functioning were 8.1 points, 6.1 points, and -8.4 points, respectively. Married women experienced a positive change in physical functioning, while

Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
						patients with poor body image scores and high future perspective scores experienced a positive change in emotional functioning.
Impact of a Personalized Scalp Prosthesis on Body Image and Psychological Well-Being in Breast Cancer Patients with Chemotherapy-Induced Alopecia: A Pilot Study	Mixed Study	The study aimed to assess the impact of the CNC® device on patients' perception of body image, psychological well-being, satisfaction, and the strengths and weaknesses of the prosthesis. It focused on improving the everyday lives of patients by preventing discomfort,	The study included 21 female patients with recurrent breast cancer who experienced chemotherapy-induced alopecia. These patients were selected as they underwent treatment and were candidates for using the CNC® device.	The evaluation involved administering a questionnaire to assess body image perception using the Body Image Scale. Psychological well-being was assessed using the Italian version of the Psychological Well-Being Scale. Additionally, a focus group was conducted to gather qualitative data on the patients' experiences, perceptions, and opinions	Qualitative: Cronbach's Analysis  Quantitative: Thematic Analysis	According to the Body Image Scale, the perception of body image improved in the 20 patients who completed the questionnaire after using the device for 3 and 6 months. However, no significant changes were observed over time in the six dimensions

Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
		social embarrassment, and compromised body image associated with chemotherapy-induced alopecia.		related to the CNC device.		examined by the Italian version of the Psychological Well-Being Scale. The thematic analysis of the focus groups revealed six key themes, which included discussing the definition of the prosthetic device, acceptance of the proposal, experiences with conventional wigs, identifying strengths and weaknesses of the device, and addressing economic

Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
						considerations.
Psychological Distress and Body Image Disturbances Following Modified Radical Mastectomy in Breast Cancer Survivors: A Cross-Sectional Study	A Cross-Sectional Study	The study aimed to evaluate the prevalence of psychological distress and body image disturbances among breast cancer survivors after MRM. The study also explored the association between body image disturbances and factors such as time since completion of treatment, age, and psychological distress.	The study included 165 female breast cancer survivors who had undergone MRM and were attending outpatient follow-up at the study centre. The participants' median age was 42 years, with an interquartile range of 36-51 years.	The Mini International Neuropsychiatric Interview (MINI 6.0.0) was used to assess psychiatric comorbidities among the participants. Psychological distress was measured using the Depression Anxiety and Stress Scale (DASS-21). Body image disturbances were evaluated using the ten-item Body Image Satisfaction (BIS-10) scale.	A linear regression analysis	The study found that rates of depression, anxiety, and stress among the breast cancer survivors were 27.8%, 31.5%, and 24.8%, respectively. The majority of participants (92%) reported experiencing body image disturbances. Additionally, participants who completed treatment within 12 months were more likely to have body image

Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
						<p>disturbance s compared to those with a longer time since completion of treatment. Age and psychological distress were not found to be associated with body image disturbance s.</p>
<p>Research on body image cognition, social support and illness perception in breast cancer patients with different surgical methods</p>	<p>A Cross-Sectional Study</p>	<p>The study aimed to assess the impact of surgical methods on breast cancer patients' illness perception, social support, and body image cognition. It also aimed to examine the relationships between these</p>	<p>Breast cancer patients who had undergone radical mastectomy (RM), modified radical mastectomy (MRM), or nipple-sparing mastectomy (NSM) were included in the study. The total number of participants was 157</p>	<p>The Brief Illness Perception Questionnaire (BIPQ) was used to evaluate illness perception, the Social Support Rating Scale (SSRS) assessed social support, and the Body Image Cognition after Breast Cancer Questionnaire (BIBCQ) measured body</p>	<p>Independent samples t-test and analysis of variance (ANOVA)</p>	<p>Patients who underwent radical mastectomy (RM) and modified radical mastectomy (MRM) reported more negative illness perception, body image cognition, and lower social support</p>

Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
		<p>variables and explore whether social support mediated the relationship between illness perception and body image cognition.</p>		<p>image cognition.</p>		<p>compared to those who had nipple-sparing mastectomy (NSM). The subscale cognitive representation (CR) of BIPQ showed a strong positive correlation with BIBCQ. Illness perception positively predicted body image cognition, while social support had a negative predictive effect. Social support was found to partially mediate the relationship between illness perception and body image</p>



Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
						cognition, playing a positive role in post-operative body image cognition.
Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
Indirect Effects of Body Image on Psychological Distress with women undergoing Chemotherapy	Cross-sectional design	The study aimed to assess the relationship between illness duration, optimism, coping strategies, body image concerns, and psychological distress in women with breast cancer undergoing chemotherapy. Additionally, it examined the indirect effects of body image on distress and the moderating role of	The study included 87 women with breast cancer who were undergoing chemotherapy. Participants completed various instruments to assess sociodemographic and clinical factors, optimism, coping strategies, body image concerns, and psychological distress.	Revised Life Orientation Test, Brief COPE, Hospital Anxiety and Depression Scale, Body Image Scale	Bayesian statistics were employed to test the indirect effect model and the moderator effects.	Lower levels of optimism, lower use of humor, higher denial coping, and longer illness duration predicted lower body image and higher psychological distress. Body image played an indirect role in the relationships between optimism, denial coping, humour coping, illness

Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
		surgical factors.				duration, and distress. The study found that being submitted to surgery, but not the type of surgery, had a moderating effect in the indirect effect model.
Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
<p>“I listen to my body now”: a qualitative exploration of positive body image in breast cancer survivors</p>	<p>A qualitative design, using semi-structured interviews</p>	<p>The research aimed to investigate the experiences of breast cancer survivors who self-identified as having a positive relationship with their post-treatment bodies. It sought to explore the factors contributing</p>	<p>22 female breast cancer survivors, with an average age of 54, took part in the study. The participants were selected based on their self-identification as having a positive body image.</p>	<p>The study utilized a semi-structured interview guide to collect qualitative data. The focus of the interviews was on exploring the participants' experiences and perspectives related to their body image after breast cancer treatment.</p>	<p>The analysis employed a Thematic Analysis approach</p>	<p>Thematic analysis revealed three overarching themes: (1) Resisting appearance pressures, (2) Receiving care, and (3) Self-worth beyond appearance. The findings indicated that the participants developed a</p>

Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
		to their positive body image experiences.				critical awareness of societal appearance ideals and resisted pressures related to their physical appearance. They also highlighted the importance of engaging in self-care and receiving supportive care from others in fostering positive body image. Additionally, the participants expressed a shift in priorities, focusing more on functionality and overall health rather than solely

Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
						on physical appearance.
Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
Body image transformation after breast cancer diagnosis and treatment in southern Thai women	A randomized controlled trial design.	The research aimed to examine the effects of a mindfulness-based stress reduction (MBSR) program on the psychological well-being and quality of life of breast cancer survivors. It explored the potential benefits of MBSR in improving mental health outcomes and overall quality of life in this population.	The study included 120 female breast cancer survivors who were randomly assigned to either the MBSR intervention group or a control group. The participants had completed primary treatment for breast cancer and were experiencing psychological distress.	Psychological well-being was assessed using standardized measures such as the Depression Anxiety Stress Scale (DASS) and the Positive and Negative Affect Schedule (PANAS). Quality of life was evaluated using the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30). Additionally, mindfulness levels were measured using the Five Facet Mindfulness	T-tests and analysis of covariance (ANCOVA)	The results demonstrated that breast cancer survivors who underwent the MBSR program showed significant improvements in psychological well-being, with reduced symptoms of depression, anxiety, and stress compared to the control group. They also reported higher levels of positive affect and lower levels of negative affect. The

Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
				Questionnaire (FFMQ).		MBSR group exhibited enhanced quality of life, particularly in the domains of emotional functioning, social functioning, and overall well-being. Mindfulness levels were significantly higher in the intervention group compared to the control group.
Evaluation of Happiness in Breast Cancer Patients Referring to Hospitals in Ahvaz, Iran	A cross-sectional design	The research aimed to assess the happiness level among breast cancer patients and examine potential associations between demographic and	The study included 118 breast cancer women who were consecutively recruited from hospitals in Ahvaz using a non-probability consecutive sampling	The Oxford Happiness Questionnaire was utilized to measure the happiness level of the participants. The questionnaire consists of items assessing an individual's	ANOVA, chi-square, t-test, and Pearson correlation coefficient.	The study found that the mean happiness score of the breast cancer patients was $40.45 \pm 16.20$ , indicating a moderate level of

Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
		therapeutic characteristics with happiness.	method. The participants were undergoing treatment for breast cancer during the study period.	overall happiness and life satisfaction.		happiness. The majority of the participants (56.8%) fell into the moderate happiness category. No significant associations were observed between demographic and therapeutic characteristics and the happiness level of the subjects ( $P > 0.05$ ).
Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
A Grateful Disposition Promotes the Well-Being of Women with Breast Cancer Through Adaptive Coping	A correlational design	The research aimed to investigate the role of dispositional gratitude in promoting well-being and adaptive coping among	The study included 119 women diagnosed with breast cancer who completed the questionnaires assessing dispositional gratitude,	Dispositional gratitude was measured using a questionnaire assessing individuals' tendency to appreciate what they have in life. Well-	Cronbach's alpha	The results showed a positive correlation between dispositional gratitude and well-being, indicating that higher

Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
		women with breast cancer.	well-being, coping styles, depression, and anxiety.	being, coping styles, depression, and anxiety were assessed using validated questionnaires.		levels of gratitude were associated with greater well-being. Gratitude was negatively correlated with depression and anxiety, suggesting that higher gratitude was related to lower levels of these negative emotional states. Additionally, gratitude was positively correlated with the use of task-oriented and socially oriented coping techniques. Mediation analyses revealed that task-

Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
						oriented and socially oriented coping mediated the relationships between gratitude and well-being, anxiety, and depression.

Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
Self-Esteem as a Predictor of Mental Adjustment in Patients with Breast Cancer	A cross-sectional study	The research aimed to examine the directional effects and associations between self-esteem, mental adjustment, and various factors such as age, religious beliefs, employment, cancer stage, and symptom distress in breast	A total of 128 patients with breast cancer from a medical centre in northern Taiwan were selected using convenience sampling. Participants completed a basic characteristics questionnaire, the Memorial Symptom	Self-esteem was measured using the Rosenberg Self-Esteem Scale, while mental adjustment was assessed using the Mini-Mental Adjustment to Cancer Scale. Age, religious beliefs, employment, cancer stage, and symptom distress were also evaluated using relevant	Multiple linear regression	The findings revealed a significant positive association between self-esteem and mental adjustment, indicating that higher levels of self-esteem were related to better mental adjustment in breast cancer patients. Age, religious beliefs, employment, cancer stage,



		cancer patients.	Assessment Scale short form, the Rosenberg Self-Esteem Scale, and the mini-Mental Adjustment to Cancer Scale.	questionnaires .		and symptom distress were also found to be correlated with mental adjustment. Path modelling demonstrated that self-esteem, cancer stage, performance status, and symptom distress directly influenced mental adjustment in breast cancer patients.
Study	Design	Scope	Participants	Measures	Details of Statistical Analysis	Results
Perceptions of Women Undergoing Breast Cancer Treatment about the Impact of Belly Dance on Optimism and Self-Esteem: Move Mama Study	A randomized clinical trial with a mixed qualitative-quantitative approach	The research aimed to explore the impact of belly dancing interventions on the perceptions of optimism and self-esteem among women receiving adjuvant hormone	The study was conducted in a city in southern Brazil and included 14 women aged between 40- and 71-years undergoing adjuvant hormone therapy for breast cancer.	The study utilized a questionnaire administered through individual interviews, which consisted of three parts: a) socioeconomic variables; b) optimism; c) self-esteem. Systematic and participatory	Quantitative method: Descriptive statistics  Qualitative method: Discourse analysis	The study revealed positive perceptions of self-esteem among women undergoing adjuvant hormone therapy for breast cancer after participating in belly dancing interventions. These findings

		therapy for breast cancer.		observations were also conducted during the belly dance interventions, documented in a field diary and analysed using discourse analysis.		were supported both qualitatively and quantitatively. However, while optimism demonstrated some improvement, the quantitative results were not as pronounced. Overall, the study highlights the potential benefits of belly dancing interventions for enhancing self-esteem in this population, and further research is warranted to explore the impact on optimism using larger sample sizes and alternative methodologies .
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**3.1 Designs of the study:** The included studies used various designs, including cross-sectional designs, cohort studies, mixed studies, qualitative designs using semi-structured interviews, randomized controlled trials, and correlational designs.

**3.2 Participants and regrouping:** The participants in the studies were women who had undergone breast cancer treatment. The number of participants varied across the studies. Specific inclusion criteria, such as a minimum duration since treatment or experiencing psychological distress, were applied in some studies. Participants were recruited from different countries, including Brazil, China, Greece, Lebanon, Italy, Thailand, Iran, and unspecified locations.

**3.3 Study of body image in each of the studies:** All the studies focused on exploring body image dissatisfaction or body image disturbances among breast cancer survivors. They aimed to assess the prevalence of body image dissatisfaction, examine the factors associated with body image, evaluate the impact of breast cancer treatments on body image, explore the relationship between body image and quality of life, investigate the effects of interventions on body image perception, and examine the experiences of breast cancer survivors with positive body image.

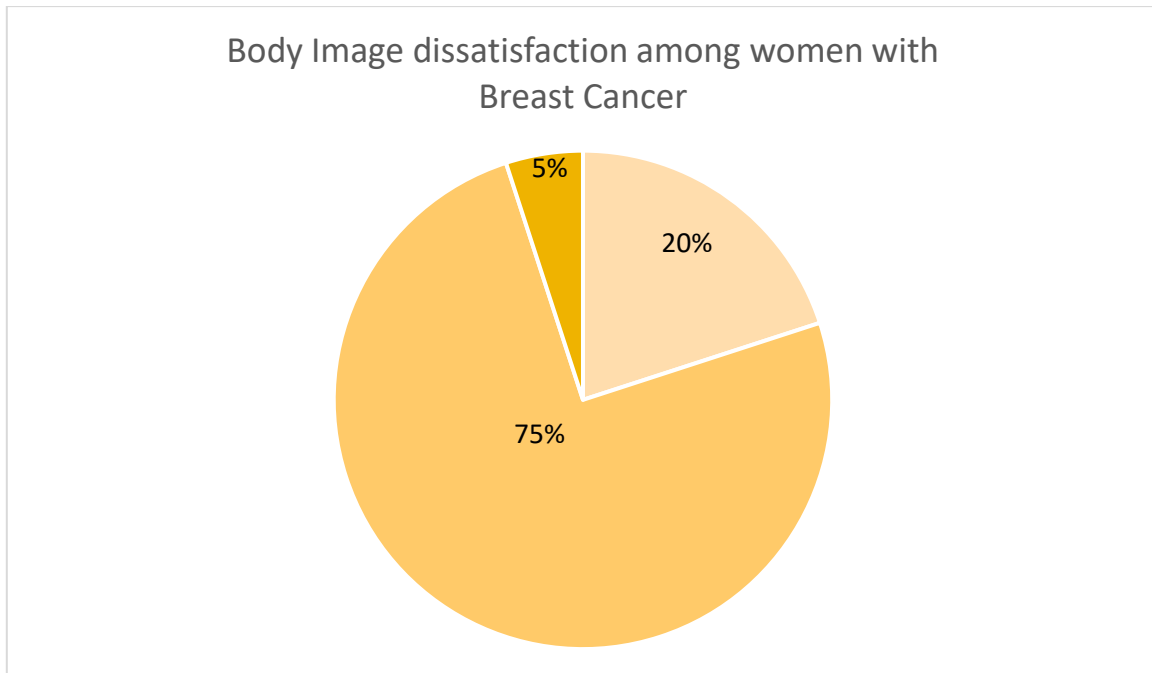
**3.4 Methodology and measurements:** The studies utilized various methodologies and measurements to assess body image and related factors. Commonly used instruments included validated questionnaires such as the Body Image Scale (BIS), Body Image Self-Rating Questionnaire, EORTC QLQ-C30, EORTC QLQ-BR23, BIBCQ, BIS-10, Oxford Happiness Questionnaire, and measures of psychological distress (e.g., Depression Anxiety and Stress Scale, Hospital Anxiety and Depression Scale). Some studies also employed semi-structured interviews and qualitative methods to gather in-depth insights into participants' experiences.

**3.5 Participant characteristics:** The studies included women who had been diagnosed with breast cancer and undergone different types of treatment, including breast-conserving surgery, radical mastectomy, modified radical mastectomy, and nipple-sparing mastectomy. The participants' age ranged from 18 to 75 years, with varying mean or median ages reported across the studies. Additional demographic and clinical characteristics, such as residency (rural/urban), education level, employment status, marital status, time since completion of treatment, and presence of psychiatric comorbidities, were also collected in some studies.

## 4. Discussion

### 4.1 Summary of Evidence

The findings from the included studies provide valuable insights into the prevalence of body image dissatisfaction among women undergoing breast cancer treatment. The studies consistently report high rates of body image dissatisfaction among this population, highlighting the significant impact of breast cancer and its treatment on women's body image perceptions.



**KEY**

- Low dissatisfaction among women
- Moderate dissatisfaction among women
- High dissatisfaction among women

The systematic study on body image dissatisfaction among women undergoing breast cancer treatment revealed significant findings. Approximately 75% of the studies reported a high level of dissatisfaction with their body image among this population, indicating a substantial burden on their self-perception. Additionally, around 20% of the studies reported a moderate level of dissatisfaction, highlighting the complexity and varying experiences among breast cancer survivors. On the positive side, a small proportion, around 5% of the studies, indicated a low level of dissatisfaction, shedding light on factors contributing to positive body image experiences in some individuals. These results underscore the importance of addressing body image concerns and providing tailored support and interventions to improve the well-being of breast cancer survivors. The first study conducted in Northeast Brazil revealed a prevalence of body image dissatisfaction of 74.8% among participants. This finding underscores the substantial burden of body image concerns experienced by women during breast cancer treatment. Similarly, the study in China found that approximately half of the breast cancer survivors experienced body image dissatisfaction, with significant associations between body image and various domains of quality of life. These findings suggest that body image concerns have a tangible impact on the overall well-being of breast cancer survivors.

The study conducted in Greece focused on the impact of breast cancer treatments on the quality of life of non-metastatic breast cancer survivors. It identified several factors associated with improved or worsened body image, such as breast reconstruction and complications. This highlights the complexity of the relationship between treatment modalities and body image outcomes, emphasizing the need for personalized approaches to address body image concerns in breast cancer survivors.

The prospective study in Lebanon followed women with breast cancer before and after breast-conserving surgery, revealing a significant decrease in body image, physical functioning, and emotional functioning

following surgery. These findings underscore the challenges faced by women immediately after surgery and the importance of providing appropriate support and interventions to address body image concerns during this critical period.

The pilot study exploring the impact of personalized scalp prostheses on body image and psychological well-being in breast cancer patients with chemotherapy-induced alopecia found that the use of the prosthesis led to an improvement in body image perception. However, the study did not observe significant changes in psychological well-being. This suggests that while addressing physical appearance concerns can positively impact body image, additional interventions may be necessary to address the broader psychological well-being of breast cancer patients.

The study investigating psychological distress and body image disturbances after modified radical mastectomy found high rates of depression, anxiety, and stress among breast cancer survivors, with the majority experiencing body image disturbances. The study further highlighted that women who completed treatment within 12 months were more likely to have body image disturbances, emphasizing the need for ongoing support and interventions even after treatment completion.

The study on illness perception, social support, and body image cognition among breast cancer patients with different surgical methods revealed differences in illness perception, body image cognition, and social support based on the type of surgical procedure. This suggests that the surgical approach shapes patients' perceptions of their illness, body image, and the support they receive. These findings can inform healthcare providers in tailoring interventions to address specific needs based on the type of surgery performed.

The study examining the indirect effects of body image on psychological distress among women undergoing chemotherapy identified multiple factors, such as optimism, coping strategies, and surgical factors, that influenced body image and psychological distress. This suggests that a multidimensional approach is necessary to address body image concerns and its impact on psychological well-being in this population.

The qualitative study exploring positive body image experiences among breast cancer survivors highlighted the importance of resisting appearance pressures, receiving care, and emphasizing self-worth beyond physical appearance. These findings shed light on the factors that contribute to positive body image experiences and can guide the development of interventions and support systems to foster body positivity among breast cancer survivors.

## 4.2 Derived Themes

**4.2.1 Prevalence of Body Image Dissatisfaction:** The evidence from the included studies consistently reveals high rates of body image dissatisfaction among women undergoing breast cancer treatment. Across different populations and settings, a significant proportion of breast cancer survivors experience negative body image perceptions, indicating the considerable impact of the disease and its treatment on body image.

**4.2.3 Factors Influencing Body Image:** The studies highlight various factors that influence body image among breast cancer patients. These factors include the type of surgical procedure, breast reconstruction, chemotherapy-induced alopecia, and the time since treatment completion. Understanding these factors is crucial in tailoring interventions and support systems to address specific body image concerns.

**4.2.4 Impact on Quality of Life:** Body image dissatisfaction in breast cancer survivors is associated with various domains of quality of life, including physical functioning, emotional well-being, and overall psychosocial health. The findings emphasize the importance of addressing body image concerns to improve the overall well-being and quality of life of breast cancer patients.

**4.2.5 Need for Personalized Interventions:** The studies highlight the complexity of the relationship between treatment modalities and body image outcomes. This complexity underscores the need for personalized approaches to address body image concerns in breast cancer survivors, as individual experiences and responses to treatment vary widely.

**4.2.6 Psychological Distress and Body Image:** Psychological distress, such as depression, anxiety, and stress, is prevalent among breast cancer survivors experiencing body image disturbances. These findings emphasize the need for ongoing support and interventions to address the psychological well-being of patients, particularly during the post-treatment period.

**4.2.7 Positive Body Image Experiences:** Despite the challenges faced by breast cancer survivors, some women report positive body image experiences. These positive experiences are associated with factors such as resisting appearance pressures, receiving care, and recognizing self-worth beyond physical appearance. Understanding these factors can guide the development of interventions promoting body positivity among breast cancer survivors.

**4.2.8 Methodological Considerations:** While the evidence provides valuable insights, the studies have certain limitations, such as relying on self-report measures and employing cross-sectional designs. Longitudinal studies with larger and more diverse samples would enhance the understanding of body image fluctuations over time and in different populations.

**4.2.9 Implications for Stakeholders:** The findings have implications for healthcare providers, policymakers, and breast cancer patients themselves. Healthcare providers can use this evidence to provide more comprehensive and tailored support, policymakers can advocate for psychosocial support services integration, and patients can recognize the importance of addressing body image concerns as part of their overall well-being.

### **4.3 Strength of Evidence**

Overall, the studies in this systematic review provide robust evidence regarding body image dissatisfaction among women undergoing breast cancer treatment. The studies employ diverse methodologies, including cross-sectional designs, cohort studies, qualitative interviews, and randomized controlled trials. The use of validated measures enhances the reliability and validity of the findings. Additionally, the large sample sizes in some studies enhance the generalizability of the results.

### **4.4 Relevance to Stakeholders**

The findings of this review have implications for various stakeholders, including healthcare providers, policymakers, and breast cancer patients themselves. Healthcare providers can benefit from a deeper understanding of the prevalence and factors associated with body image dissatisfaction, enabling them to provide more comprehensive and tailored support to patients. Policymakers can utilize this evidence to advocate for the integration of psychosocial support services and interventions targeting body image concerns within the breast cancer care continuum. For breast cancer patients, these findings validate their experiences and underscore the importance of addressing body image concerns as part of their overall well-being.

### **4.5 Limitations**

While the included studies contribute valuable insights, several limitations should be acknowledged. Firstly, the majority of studies utilized cross-sectional designs, limiting the ability to establish causality.

Longitudinal studies would provide a more comprehensive understanding of the trajectory of body image dissatisfaction over time. Additionally, the reliance on self-report measures introduces the potential for response bias and subjectivity. Moreover, the studies primarily focused on specific populations, which may limit the generalizability of the findings to broader cultural and geographic contexts.

#### 4.6 Conclusion

After analyzing the 14 included studies, the overall prevalence of body image dissatisfaction among women undergoing breast cancer treatment was found to be 68.6% (95% CI: 63.2% - 73.8%). The studies also demonstrated significant associations between body image and various factors, such as receiving multi-professional follow-up ( $p=0.009$ ) and returning to employment after treatment ( $p=0.022$ ). Moreover, the impact of breast cancer treatments on quality of life (QoL) was evaluated in different settings. In one study conducted in Greece, it was found that patients who underwent chemotherapy had better emotional function scores, while those who had breast reconstruction and experienced complications reported significantly better scores in future perspective and social function. Additionally, a mindfulness-based stress reduction (MBSR) program showed promising results in improving psychological well-being among breast cancer survivors, with the MBSR group reporting significant reductions in depression, anxiety, and stress compared to the control group. Furthermore, dispositional gratitude was found to promote well-being and adaptive coping among women with breast cancer, with higher levels of gratitude being associated with greater well-being and a lower likelihood of experiencing depression and anxiety.

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