

Factors Influencing Body Image in Women with Breast Cancer: A Comprehensive Literature Review

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Abstract

Context: Many psycho-socioeconomic and other types factors associated with cancer, the treatment process, and changes in patients' physical appearance and sexual function influence the body image of women with breast cancer. The purpose of this study was to determine which factors influence the body image of women with breast cancer.

Data Collection: A narrative literature review was conducted. Electronic databases, including Google Scholar, SID, Magiran, Iran-Doc, Berekat, Web of Science, Science Direct, Cochrane Library, ProQuest, Scopus, and PubMed, including Medline, were searched to retrieve articles published from 1993 to 2016 using the keywords breast cancer, treatment, body image, and related factors. The quality of selected studies was appraised using a checklist adapted from Samadaee-Gelekholaee (2016).

Results: Of 690 articles retrieved in the search, 190 articles were selected for full text appraisal. Finally, 44 articles were selected for data analysis. The results were classified under three headings: bio-psycho-socioeconomic factors, factors associated with the disease and treatment processes, and physical appearance and sexual function.

Conclusions: The findings of this review showed that many factors can influence the body image of women suffering from breast cancer. These factors were predictors of patients' inter-personal and intra-personal relationships with their partners and others who influenced various other aspects of their lives, possibly leading to many life's issues. These factors must be identified and considered to make the most appropriate decisions for patients. The strength of this study lies in the exploration of factors influencing the body image of women with breast cancer which earlier studies did not consider. Moreover, the authors believe that this research has addressed nearly all the factors that are real concerns in the body image of women with breast cancer.

Keywords: Breast Cancer, Body Image, Treatments, Related Factors

1. Context

Breast cancer is one the most common diseases among women throughout the world (1-4) and has the highest mortality rate after lung cancer (1, 5). However, recent improvements in the early detection and treatment process have significantly enhanced women's life expectancy (2, 6-8). Treatment modalities for women with cancer, such as surgery, radiotherapy, chemotherapy, radiation therapy, and endocrine therapy (9, 10), can be accompanied with various complications. For instance, common complications after chemotherapy are nausea (11), alopecia (12), poor sexual function (6), weight gain or loss (13), sexual dysfunction

(14), hair loss (15), and ovarian damage (16). Mastectomy, or the removal of one or both breasts, can result in deformity, surgical scars (17), and the sense of losing one's femininity (18)). As well, skin swelling, inflammation, and redness are complications of radiation therapy (16).

In addition to the physical complications of breast cancer, psychological issues, such as anxiety (19), can also arise due to the extensive changes in patients' bodies and minds (6, 20, 21). The most destructive psychological impact of breast cancer in women is on their body image (19, 20). Body image is defined as 'the attitudes and perceptions of individuals toward their appearance and their beliefs and

others with respect to their body' (13, 22).

Society regards the breast as the symbol of femininity (7, 19), charm, and sexuality (19), so any damage to breast can lead to worries and distress (23, 24) and harm women's whole life (23, 25). Strategies, such as educational interventions, pamphlets, online educational support (26), cognitive coping, social support, and self-efficacy, help improve patients' health conditions (19). As well, few studies have attempted to address all the factors influencing body image in women with breast cancer (1, 23). Studies investigating the therapeutic effects or complications of the treatment process on body image are rare. Therefore, the purpose of this study was to determine which factors influence body image in women with breast cancer. The findings can help identify related factors and design strategies to help women with breast cancer cope with the changes in their body image.

2. Data Collection

2.1. Development of Research Questions

A literature review using a narrative method was conducted. This design has been found suitable to improve knowledge of and collect comprehensive data on the topic studied (27, 28). The research question in this study was as follows: What factors influence body image in women with breast cancer?

2.2. Search Strategy

After the development of the research question in consultation with a panel of experts, a thorough literature search was conducted in electronic databases: Google Scholar, SID, Magiran, IranDoc, Barekat, Web of Science, Science Direct, Cochrane Library, ProQuest, Scopus, and PubMed, including Medline. Key search terms, including breast cancer, treatment, body image, and related factors were used to retrieve articles published from 1993 to 2016. The following keywords suggested by the medical subject heading (Mesh) were applied to extend the search process breast cancer, breast neoplasm-tumors, breast-cancer, breast, treatment, therapy, surgery, cancer-associated treatment, body image, body, and related or associated factors. Finally, Boolean strategies of combining search keywords were applied: breast cancer or breast neoplasm, breast cancer and body image, and breast cancer and body image and associated factors.

The search was led to the following primary results: Google Scholar (285 articles), SID (9 articles), Magiran (3 articles), IranDoc (2 articles), Barekat (10 articles), Web of Science (66 articles), Science Direct (100 articles), Cochrane Library (30 articles), ProQuest (25 articles), PubMed/Medline (110 articles), Scopus (50), and Springer (10 articles).

2.3. Inclusion Criteria

The articles were selected based on the following criteria: the articles 1) focused on the research question concerning (2) which factors influence 2) the body image in 4) women with breast cancer. As well, 5) breast cancer had to be included in the title of articles 6) published in online journals.

2.4. Exclusion Criteria

Articles which focused on other cancer types, quality of life, or sexual quality of life in women with breast cancer were excluded from the study.

2.5. Quality Appraisal

The quality of studies was appraised using a checklist (Box 1) adopted from a study by Samadaee-Gelehkolaee (27). This checklist consisted of 16n items which used a 0 or 1 scoring system (not eligible or eligible). The scores for the 16 items were calculated, and each article was rated as high quality, medium quality, or poor quality. If an article received a score of 75% (12-16 points), it was of high quality. A score of 50% - 74% (8-12 points) indicated medium quality, and less than 50% (8 points) indicated poor quality (27, 28).

2.6. Data Analysis

Two authors (M-R, Z-H) independently checked the title, abstract, and full text of the retrieved articles using the inclusion criteria. The two authors held discussions to reach agreement on the inclusion of articles, and in the case of disagreements, they sought the views of the third author.

The articles were screened in four stages. First, during the screening of the titles of 690 articles, 349 were excluded for repetition, lack of relevance, and an absence of features connected to the study criteria. The second involved 341 studies. Failure of the abstract to comply with the inclusion criteria, the unavailability of full-text articles, and articles written in languages other than Farsi and English resulted in the removal of 151 articles. Third, the full text of 190 articles was appraised, and 149 which did not meet the inclusion criteria were excluded.

Finally, the quality of 44 articles was assessed based on the checklist and classification of factors influencing the body image of women with breast cancer. Thirteen studies received scores of 12-16, indicating high quality, and were published from 1999 to 2014. Twenty-five articles had average quality with scores of 8-12 and were published from 2003 to 2015. Six articles had poor quality with scores of less than 8 and were published from 2006 to 2016. The 13 high-quality articles are listed in Table 1.

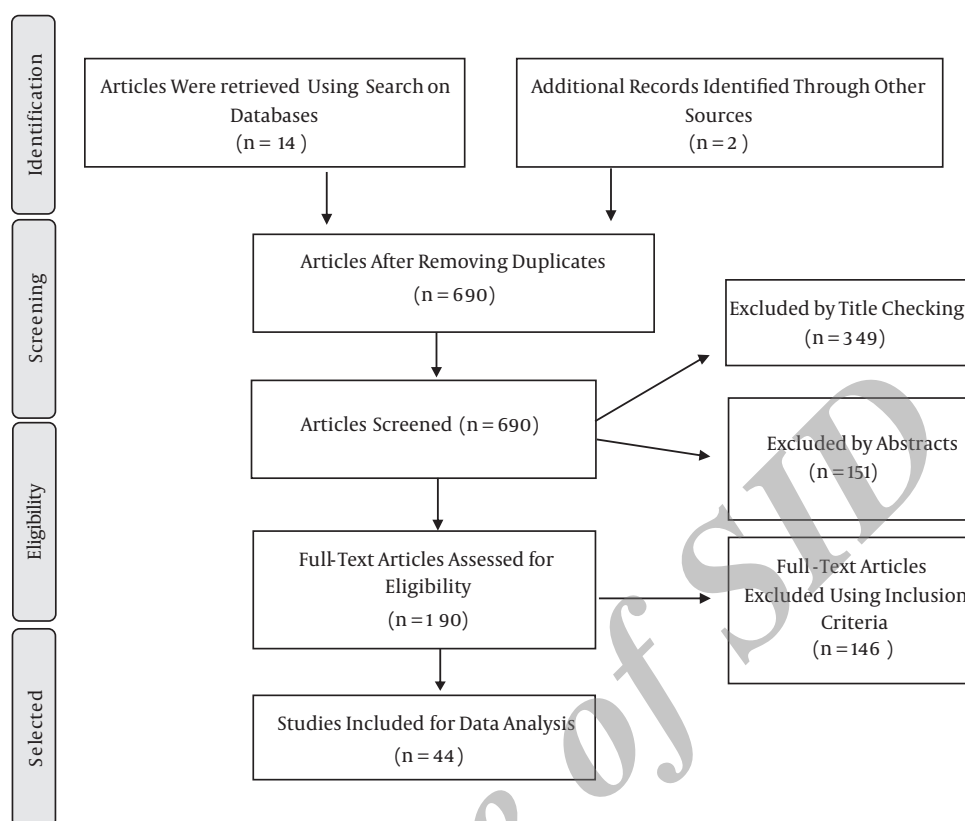


Figure 1. Article Selection Diagram (PRISMA Flow Diagram)

2.7. Findings

The data are presented in [Table 1](#) and [Figure 2](#).

2.8. Ethical Considerations

The research proposal for the study was approved by the research council affiliated with Mazandaran University of Medical Sciences (Grant number: 180 - 95).

3. Results

The findings were classified into four categories of factors influencing the body image of women with breast cancer ([Table 1](#)).

3.1. Biopsychic Socioeconomic Factors

Biological factors, such as age, race, gender, and education, were recognized to be related to body image in women with breast cancer. Young women were less comfortable with the changes that occur in the body during the process of disease and treatment ([5](#), [10](#), [29](#)). They exhibited a higher level of stress when facing with the disease and its

treatment process and expressed a significant level of distress regarding any changes in their body image ([30-33](#)).

Other most influential factors in patients with breast cancer were social (employment), economic (income, poverty, lack of support resources), and cultural status. Studies have linked poor body image to low income levels ([2](#), [19](#)). In addition, spouses' income level was related to body image ([19](#)). Women's employment as a social factor was predictive of the development of negative body image. Employed women tended to experience more stress regarding body image, which could be due to a lack of social support ([23](#)).

Women's education and knowledge levels predicted their compliance with the disease and the amount of stress experienced by them. Women with a low level of education suffered more from discomfort over their body image, possibly giving rise to the development of the defensive mechanisms of avoidance or denial which, in turn, could create psychological distress ([23](#), [34](#)).

Psychological factor influencing body image included personal and interpersonal factors. Individual psychological factors related to the body image of women with

Box 1. Checklist for Assessing Article Quality^a

Items
Study methods
A- Possession of a valid questionnaire
B- Focus on body image as the main subject of the study
C- Application of a valid instrument to determine the body image of patients with breast cancer
Community population survey
D- Description of at least two demographic data variables (e.g., age, gender, education level, income level)
E- Description of at least two demographic data variables related to breast cancer, (e.g. cancer type, treatment duration, frequency or type)
F- Description of inclusion and exclusion criteria
G- Application of methods to examine predictors or correlations
Study participants
H- Percentage of patients' participation in the study (> 70%)
I- Description of patients' withdrawal from the study
J- Participation of at least 50 people in the study
Study design
K- Prospective or cross-sectional data collection
L- Study duration of more than one year with a longitudinal design
M- Description of the data collection process
N- Patient follow-up of at least 6 months
O- Attrition rate of less than 20% during follow-up
Result
P- Comparison of the results for two groups (e.g., health controls and patients with cancer, a pre/post comparison of two dependent groups)

^aUsing this checklist, 16 items were used to review the articles: items A, B, and C examined the study tools, items D - G the social population, items H - J the study participants, items K - O the design, and item P the results. The most important items of the checklist were A, B, C, and E which included the quality criteria. The majority of these articles addressed women's body image, and their study participants were women with breast cancer. The instrument used in the study was a questionnaire on body image.

breast cancer were mental health, fatigue, anxiety, low self-confidence and self-esteem, concerns about weight gain or loss, , fear of disease recurrence, depression, and feelings of embarrassment about showing their naked body (12, 15, 25, 29, 35, 36). Women who experienced breast cancer at an early age and had poor mental health faced with a range of greater concerns regarding body image (29). The presence of a depressive mood or severe depression influenced the level of body image issues (10). An interpersonal factor was the relationship with one's spouse. The women's partner's difficulties in emotional understanding could undermine bilateral relationship and cause women to avoid a sexual relationship (7).

The effect of treatment on women's appearance caused unpleasant mental and physical conditions (1). For instance, losing a breast caused a persistent feeling of shame over displaying one's naked body (25), creating a considerable amount of stress and mental issues (23).

Disease diagnosis and treatment decisions caused high levels of anxiety in women (1). Physical changes triggered psychological trauma that resulted in considerable distress and concern (23, 37) and undermined women's self-confidence (23). The type of treatment could also cause psychological problems (23). Depression and anxiety are the most frequently observed psychological factors in patients after the disease (30, 37).

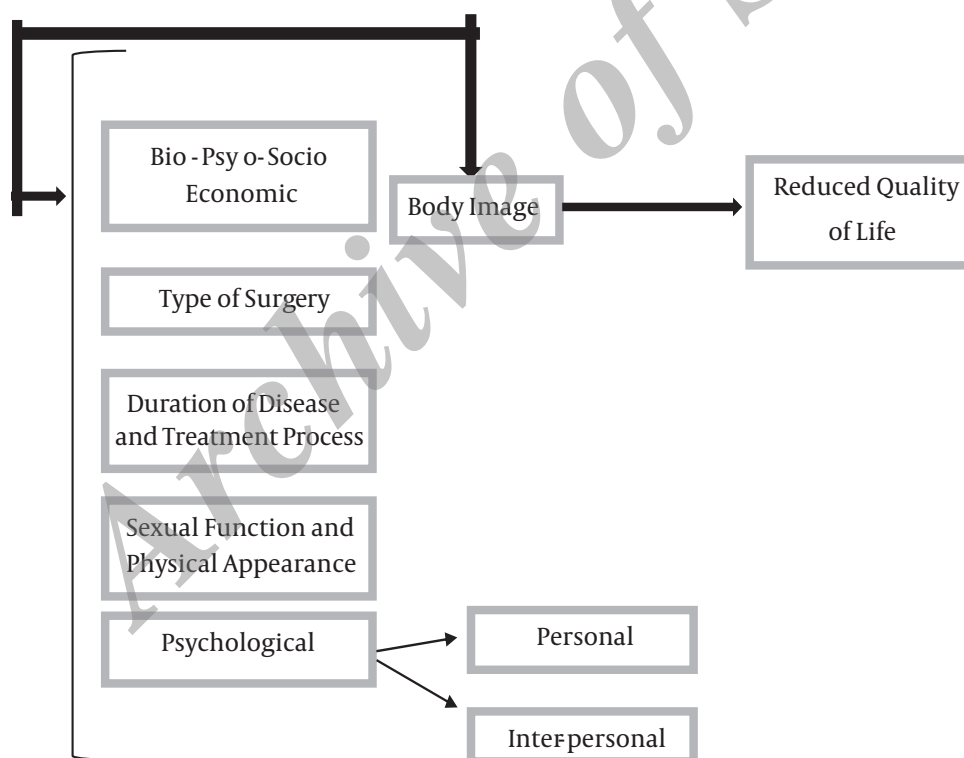
The disease changed spousal roles as the women's husbands took over their responsibilities. Thus, the presence of the disease influenced both partners and made stress a common factor shared by them. This role change and stress toleration negatively influenced the spouses' conjugal relationship (7).

3.2. Factors Associated With the Disease and Treatment Process

The reported increase in the cancer survival rate of women has been attributed to the development of breast

Table 1. Quality Assessment Criteria for Articles on the Body Image of Women with Breast Cancer

Study	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Score
Yvonne Brandberg (2008)		+	+	+	-	-	-	+	+	+	+	+	+	-	+	+	12
Pat Fobair (2006)		+	+	+	+	+	+	+	-	+	+	+	+	-	+	-	13
K. Härtl (2003)		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	16
Melissa I. Figueiredo (2004)		+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	15
Karen Kadela Collins (2012)		+	-	+	+	+	+	+	-	+	+	+	+	+	+	+	14
Victoria Mock (1993)		+	+	+	+	+	+	+	-	+	+	-	+	-	+	+	13
Charles S. Carver (1998)		+	+	+	+	+	+	+	-	+	+	+	-	+	+	+	14
Helena Moreira (2010)		+	-	+	+	+	+	+	+	+	+	+	-	+	-	+	13
Jessica P. Gopie (2013)		+	+	-	-	+	+	+	+	+	+	+	-	+	+	+	13
Penelope Hopwood (2010)		+	+	-	-	+	-	+	+	+	+	+	+	+	+	-	12
Giovanni Morone (2014)		+	+	-	-	+	+	+	+	+	+	+	+	+	+	-	13
Wendy W. T. Lam (2012)		+	+	-	-	+	+	+	-	+	+	+	+	+	+	+	13
Kojiro Shimozuma (1999)		-	+	-	-	+	+	+	+	+	+	+	+	+	+	-	12

**Figure 2.** Factors Influencing the Body Image of Women with Breast Cancer

cancer treatments (6). The treatment modalities are surgery (mastectomy, modified mastectomy, lumpectomy or breast conservation surgery) and hormonal therapy (chemotherapy, radiotherapy, radiation therapy, and en-

docrine therapy) (10, 15, 19, 38). According to the classification of influencing factors in this study, treatment complications are a shared point between these modalities. Women's subjective perceptions of their bodies during the

Table 2. Factors Influencing the Body Image of Women with Breast Cancer

Related Factors Influencing Body Image	Related Articles	Selected Articles
Bio-psycho-socio-economic	57	Biological = Race, age, and sex; Economic = Income; Social = Employment, culture, confidence, couples' behavioral conflict, avoiding showing the location of the wounds to others, ability to keep children, partner's poor understanding, partner's difficulty understanding; Education = Training; Psychology = Lower self-esteem, fear of recurrence, concern about weight loss and gain, depression, anxiety, feeling of embarrassment over one's nude body, sense of being charming, distress and dissatisfaction with one's appearance and the attitudes and perceptions of women; Health = Sense of loss, poor mental health
Surgery type, disease process, and treatment type	37	Treatment process, tumor stage, advanced form of cancer, new diagnosis of cancer, duration of diagnosis, duration of surgery, chemotherapy, and radiotherapy
Sexual function and physical appearance	17	Sexual dysfunction, sexual attractiveness, scar and hair loss due to chemotherapy, weight gain and loss, skeletal muscle pain, breast deviation, skin change

treatment process had devastating physical and mental influences on women. Treatments, such as bilateral prophylactic mastectomy, had negative impacts on women's sexuality (9). Chemotherapy played a crucial role in patients' increasing concerns about weight loss (39), hair loss (12, 15, 39), skin redness (26), nausea and fatigue (16), and sexual dysfunction, such as vaginal dryness (15).

After mastectomy, women can encounter a variety of psychological, sexual, and physical issues (5) (9, 36) because the breast is recognized as a symbol of female identity (40). Following the loss of this important organ, the femininity of women is lessened (37). As body image is a description of the body which enables communication with others (41), mastectomy naturally disturbs patients' body image. Studies by Mock (1993) and Shimozuma (1999) (24, 42) confirm these findings.

In addition, factors such as the duration of diagnosis (5, 23, 36), surgery (1, 5), chemotherapy, radiotherapy, and adjuvant treatment (5), are associated with changes in body image. Surgery type and treatment duration can also weaken or improve body image (40).

3.3. Physical Appearance and Sexual Function

The development of scars (37), weight gain or loss (10, 15, 35), wounds, hair loss (2, 8, 9), burns (9), appearance changes (29), muscle aches, lymphedema (35), muscle strength (43), deformity (2), and changes in skin (2) or sexual attractiveness (44) can lead to dissatisfaction with body image. The external symptoms of breast cancer have caused dissatisfaction in patients and avoidance of showing the location of their wound to relatives (37).

Sexual issues had important, destructive effects on couples' relationship. The treatment and creation of sexual problems due to vaginal dryness and its adverse effects on desire and arousal contributed to women's undesirable body image (15) and created the conditions for marital discord.

4. Conclusions

This study was conducted to determine which factors influence the body image of women with breast cancer. Treatments modalities have played an important role in the improvement of the survival rate of women with breast cancer but can also cause physical, sexual, and psychological problems (18). The issues caused by this disease affect all aspects of life, so breast cancer has effects on both personal and interpersonal identities (7). Changes in women's appearance and body image leads to the development of psychological problems, such as stress, depression, avoidance, denial, guilt, despair, fear, embarrassment, the feeling of unattractiveness. Physical problems, such as wounds, (45) deformity, and a lack of sexual desire (8), can also arise.

The findings of this study are in line with those of Lam et al. (2012) but indicate the type of surgery had little effect on patients' body image over time (46). Making suitable decisions about the best treatment likely is a predictor of acceptance of changes in body image in short- and long term.

Mastectomy involves the loss one or both breasts and creates the sense of losing one's femininity because breasts are intertwined with women's sexual identity and their subjective perceptions of their appearance (17-19, 40). Overall, the presence of the disease, treatments, and adjuvant therapies, such as radiation therapy, worsen body image, create psychological problems, and reduce women's acceptance of their changed body image after treatment (23, 26). The study findings suggested the importance of social factors to the body image of women with breast cancer. Sexual dysfunction was shown to be a social factor in the relationship between the women and their husbands. This disease affects both members of couples, confirming the findings of Fang et al. (7). The provision of appropriate interventions to cope with the disease can reduce the impact of disease-related problems on women's body image. For

instance, cognitive coping strategies, social support, and adaptation are the most effective interventions suggested by Pikler and Winterowd (19). Additionally, women's quality of life is reduced by the development of psychological problems, such as anxiety and depression. Particularly in the first year of diagnosis (6), breast cancer is associated with concern and confusion regarding one's body image as the breast is one of the most important organs influencing women's body image (12).

Another finding was women's concerns about a lack of receiving response to their questions about the disease and its related physical and psychological issues. Therefore, healthcare teams need to consider women's views of the disease and improve their awareness of disease-related complications to alleviate their concerns. Other studies confirm this finding that breast cancer and the associated problems reduce patients' satisfaction with their quality of life (29, 41, 47, 48).

The present study reviewed the literature on factors influencing the body image of women with breast cancer. The results showed that some factors played strong roles in women's continuation of treatment and quality of life. Doctors should identify these factors and treatment type to help women's compliance. As well, the further investigation of these factors in different cultures and contexts is suggested for future research.

The strength of this study was the exploration of factors influencing the body image of women with breast cancer which previous studies did not consider. Moreover, the authors believe that this article has covered nearly all the factors of real concern in the body image of women with breast cancer.

4.1. Study Limitations

The abstracts of some texts were for conferences, so access to the full text was not available.

4.2. Application in Practice

The findings of this study can help specialists, psychiatrists, and counselors identify factors influencing body image and design strategies focused on personal and interpersonal aspects to aid the diagnosis and treatment of women with breast cancer. There is a need to identify the most appropriate treatments that have the least impact on women's body image. Moreover, informing women with breast cancer about the treatment-related complications and their regulation and compliance can affect women's physical and psychological well-being.

4.3. Application in Research

Identifying social factors which influence the body image of women with breast cancer and related adaptive interventions based on culture and context are helpful for communities to implement measures to improve women's body image. It is noted that various cultural-contextual factors influence body image in different societies. Therefore, it is suggested that future studies explore these factors and describe their impacts on body image.

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Footnotes

Authors' Contribution: All authors of the study contributed to the study design. The initial version of the study was developed by Maedeh Rezaei and then checked by other authors. The final version was revised by Zeinab Hamzehgardeshi and lastly approved by all the authors.

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References

1. Sadeghi AS. Body image and self-esteem: compared two groups of women with breast cancer [in Persian]. *Iran J Breast Dis.* 2012;5(2):16-29.
2. Khang D, Rim HD, Woo J. The korean version of the body image scale-reliability and validity in a sample of breast cancer patients. *Psychiatry Investig.* 2013;10(1):26-33. doi: [10.4306/pi.2013.10.1.26](https://doi.org/10.4306/pi.2013.10.1.26). [PubMed: [26393190](https://pubmed.ncbi.nlm.nih.gov/26393190/)].
3. Khalili R, Bagheri-Nesami M, Janbabai G, Nikkhah A. Lifestyle in Iranian Patients with Breast Cancer. *J Clin Diagn Res.* 2015;9(7):06-9. doi: [10.7860/JCDR/2015/13954.6233](https://doi.org/10.7860/JCDR/2015/13954.6233). [PubMed: [26393190](https://pubmed.ncbi.nlm.nih.gov/26393190/)].
4. Naghibi SA, Moosazadeh M, Shojazadeh D, Montazeri A, Yazdani J. The Investigate Factors on Screening of the Breast Cancer Based on PEN-3 Model in Iranian Northern Women [in Persian]. *JCHR.* 2015;4(2):79-90.
5. Pakseresht S, Ingle GK, Garg S. Quality of life of women with breast cancer at the time of diagnosis in New Delhi. *J Cancer Sci Ther.* 2012;11(2):212-8.
6. Alicikus ZA, Gorken IB, Sen RC, Kentli S, Kinay M, Alanyali H, et al. Psychosexual and body image aspects of quality of life in Turkish breast cancer patients: a comparison of breast conserving treatment and mastectomy. *Tumori.* 2009;95(2):212-8. [PubMed: [19579868](https://pubmed.ncbi.nlm.nih.gov/19579868/)].

7. Fang SY, Lin YC, Chen TC, Lin CY. Impact of marital coping on the relationship between body image and sexuality among breast cancer survivors. *Support Care Cancer*. 2015;**23**(9):2551-9. doi: [10.1007/s00520-015-2612-1](#). [PubMed: [25617071](#)].
8. Anagnostopoulos F, Myrghianni S. Body image of Greek breast cancer patients treated with mastectomy or breast conserving surgery. *J Clin Psychol Med Settings*. 2009;**16**(4):311-21. doi: [10.1007/s10880-009-9176-5](#). [PubMed: [19701698](#)].
9. Moradi Msanesh F, Ahmadi H, Jomehri F, Rahgozar M. Relationship between psychological distress and quality of life in women with breast cancer [in Persian]. *J zabol univ med sci*. 2012;**4**(2):51-9.
10. Collins KK, Liu Y, Schootman M, Aft R, Yan Y, Dean G, et al. Effects of breast cancer surgery and surgical side effects on body image over time. *Breast Cancer Res Treat*. 2011;**126**(1):167-76. doi: [10.1007/s10549-010-1077-7](#). [PubMed: [20686836](#)].
11. Moreira H, Crespo C, Paredes T, Silva S, Canavarro MC, Dattilio FM. Marital Relationship, Body Image and Psychological Quality of Life among Breast Cancer Patients: The Moderating Role of the Disease's Phases. *Contemp Fam Ther*. 2011;**33**(2):161-78. doi: [10.1007/s10591-011-9149-3](#).
12. Moreira H, Canavarro MC. A longitudinal study about the body image and psychosocial adjustment of breast cancer patients during the course of the disease. *Eur J Oncol Nurs*. 2010;**14**(4):263-70. doi: [10.1016/j.ejon.2010.04.001](#). [PubMed: [20493769](#)].
13. Parizadeh H, Abadi Mashhadi H. Comparison the effectiveness of existential therapy and reality group therapy on problem solving body image of women with mastectomy. *Iranian J Obs*. 2012;**15**(22):35-27.
14. Fobair P, Stewart SL, Chang S, D'Onofrio C, Banks PJ, Bloom JR. Body image and sexual problems in young women with breast cancer. *Psychooncology*. 2006;**15**(7):579-94. doi: [10.1002/pon.991](#). [PubMed: [16287197](#)].
15. Bakht S, Najafi S. Body image and sexual dysfunctions: comparison between breast cancer patients and healthy women. *Procedia - Social and Behavioral Sci*. 2010;**5**:1493-7. doi: [10.1016/j.sbspro.2010.07.314](#).
16. Male DA, Fergus KD, Cullen K. Sexual identity after breast cancer: sexuality, body image, and relationship repercussions. *Curr Opin Support Palliat Care*. 2016;**10**(1):66-74. doi: [10.1097/SPC.0000000000000184](#). [PubMed: [26716393](#)].
17. Izadi-Ajirloo A, Bahmani B, Ghanbari-Motlagh A. Effectiveness of Cognitive Behavioral Group Intervention on Body Image Improving and Increasing Self-Esteem in Women with Breast Cancer after Mastectomy. *Journal of Rehabil*. 2013;**13**(4):72-83.
18. Özalp E, Karşioğlu EH, Aydemir O, Soygür H, Erkek BM, Peker SE, et al. Validating the Sexual Adjustment and Body Image Scale (Sabis) with Breast Cancer Patients. *Sex and Dis*. 2014;**33**(2):253-67. doi: [10.1007/s11195-014-9367-3](#).
19. Pikler V, Winterowd C. Racial and body image differences in coping for women diagnosed with breast cancer. *Health Psychol*. 2003;**22**(6):632-7. doi: [10.1037/0278-6133.22.6.632](#). [PubMed: [14640861](#)].
20. Chua AS, DeSantis SM, Teo I, Fingeret MC. Body image investment in breast cancer patients undergoing reconstruction: taking a closer look at the Appearance Schemas Inventory-Revised. *Body Image*. 2015;**13**:33-7. doi: [10.1016/j.bodyim.2014.12.003](#). [PubMed: [25600137](#)].
21. Hopwood P, Haviland JS, Sumo G, Mills J, Bliss JM, Yarnold JR, et al. Comparison of patient-reported breast, arm, and shoulder symptoms and body image after radiotherapy for early breast cancer: 5-year follow-up in the randomised Standardisation of Breast Radiotherapy (START) trials. *Lancet Oncol*. 2010;**11**(3):231-40. doi: [10.1016/S1470-2045\(09\)70382-1](#). [PubMed: [20138809](#)].
22. Sabiston CM, Rusticus S, Brunet J, McDonough MH, Hadd V, Hubley AM, et al. Invariance test of the Multidimensional Body Self-Relations Questionnaire: do women with breast cancer interpret this measure differently?. *Qual Life Res*. 2010;**19**(8):1171-80. doi: [10.1007/s11136-010-9680-y](#). [PubMed: [20549369](#)].
23. Chang O, Choi EK, Kim IR, Nam SJ, Lee JE, Lee SK, et al. Association between socioeconomic status and altered appearance distress, body image, and quality of life among breast cancer patients. *Asian Pac J Cancer Prev*. 2014;**15**(20):8607-12. [PubMed: [25374176](#)].
24. Shimozuma K, Ganz PA, Petersen L, Hirji K. Quality of life in the first year after breast cancer surgery: rehabilitation needs and patterns of recovery. *Breast Cancer Res Treat*. 1999;**56**(1):45-57. [PubMed: [10517342](#)].
25. Gopie JP, Mureau MA, Seynaeve C, Ter Kuile MM, Menke-Pluymers MB, Timman R, et al. Body image issues after bilateral prophylactic mastectomy with breast reconstruction in healthy women at risk for hereditary breast cancer. *Fam Cancer*. 2013;**12**(3):479-87. doi: [10.1007/s10689-012-9588-5](#). [PubMed: [23224779](#)].
26. Morone G, Iosa M, Fusco A, Scappaticci A, Alcuri MR, Saraceni VM, et al. Effects of a multidisciplinary educational rehabilitative intervention in breast cancer survivors: the role of body image on quality of life outcomes. *ScientificWorldJournal*. 2014;**2014**:451935. doi: [10.1155/2014/451935](#). [PubMed: [25405222](#)].
27. Samadaee-Gelehkolaee K, McCarthy BW, Khalilian A, Hamzehgardeshi Z, Peyvandi S, Elyasi F, et al. Factors Associated With Marital Satisfaction in Infertile Couple: A Comprehensive Literature Review. *Glob J Health Sci*. 2016;**8**(5):96.
28. Tao P, Coates R, Maycock B. Investigating marital relationship in infertility: a systematic review of quantitative studies. *J Reprod Infertil*. 2012;**13**(2):71-80. [PubMed: [23926528](#)].
29. Figueiredo MI, Cullen J, Hwang YT, Rowland JH, Mandelblatt JS. Breast cancer treatment in older women: does getting what you want improve your long-term body image and mental health?. *J Clin Oncol*. 2004;**22**(19):4002-9. doi: [10.1200/JCO.2004.07.030](#). [PubMed: [15459224](#)].
30. Gomez-Campelo P, Bragado-Alvarez C, Hernandez-Lloreda MJ, Sanchez-Bernardos ML. The Spanish version of the Body Image Scale (S-BIS): psychometric properties in a sample of breast and gynaecological cancer patients. *Support Care Cancer*. 2015;**23**(2):473-81. doi: [10.1007/s00520-014-2383-0](#). [PubMed: [25135839](#)].
31. Frierson GM, Thiel DL, Andersen BL. Body change stress for women with breast cancer: the Breast-Impact of Treatment Scale. *Ann Behav Med*. 2006;**32**(1):77-81. doi: [10.1207/s15324796abm3201_9](#). [PubMed: [16827632](#)].
32. McClelland SI, Holland KJ, Griggs JJ. Quality of life and metastatic breast cancer: the role of body image, disease site, and time since diagnosis. *Qual Life Res*. 2015;**24**(12):2939-43. doi: [10.1007/s11136-015-1034-3](#). [PubMed: [26038224](#)].
33. Miller SJ, Schnur JB, Weinberger-Litman SL, Montgomery GH. The relationship between body image, age, and distress in women facing breast cancer surgery. *Palliat Support Care*. 2014;**12**(5):363-7. doi: [10.1017/S1478951513000321](#). [PubMed: [23942229](#)].
34. Shoma AM, Mohamed MH, Nouman N, Amin M, Ibrahim IM, Tobar SS, et al. Body image disturbance and surgical decision making in Egyptian post menopausal breast cancer patients. *World J Surg Oncol*. 2009;**7**:66. doi: [10.1186/1477-7819-7-66](#). [PubMed: [19678927](#)].
35. Rosenberg SM, Tamimi RM, Gelber S, Ruddy KJ, Kereakoglou S, Borges VF, et al. Body image in recently diagnosed young women with early breast cancer. *Psychooncology*. 2013;**22**(8):1849-55. doi: [10.1002/pon.3221](#). [PubMed: [23132765](#)].
36. Hartl K, Janni W, Kastner R, Sommer H, Strobl B, Rack B, et al. Impact of medical and demographic factors on long-term quality of life and body image of breast cancer patients. *Ann Oncol*. 2003;**14**(7):1064-71. [PubMed: [12853348](#)].
37. Aguilar Cordero MJ, Mur Villar N, Neri Sanchez M, Pimentel-Ramirez ML, Garcia-Rillo A, Gomez Valverde E. Breast cancer and body image as a prognostic factor of depression: a case study in Mexico City. *Nutr Hosp*. 2015;**31**(1):371-9. doi: [10.3305/nh.2015.31.1.7863](#). [PubMed: [25561132](#)].
38. Hopwood P, Haviland J, Mills J, Sumo G, Bliss MJ. The impact of age and clinical factors on quality of life in early breast cancer: an analysis of 2208 women recruited to the UK START Trial (Standardisation of Breast Radiotherapy Trial). *Breast*. 2007;**16**(3):241-51. doi:

- 10.1016/j.breast.2006.11.003. [PubMed: 17236771].
39. Garrusi B, Faez H. How do Iranian Women with Breast Cancer Conceptualize Sex and Body Image?. *Sex and Dis.* 2008;**26**(3):159-65. doi: 10.1007/s11195-008-9092-x.
 40. Brandberg Y, Sandelin K, Erikson S, Jurell G, Liljegren A, Lindblom A, et al. Psychological reactions, quality of life, and body image after bilateral prophylactic mastectomy in women at high risk for breast cancer: a prospective 1-year follow-up study. *J Clin Oncol.* 2008;**26**(24):3943-9. doi: 10.1200/JCO.2007.13.9568. [PubMed: 18711183].
 41. Fang SY, Shu BC, Chang YJ. The effect of breast reconstruction surgery on body image among women after mastectomy: a meta-analysis. *Breast Cancer Res Treat.* 2013;**137**(1):13-21. doi: 10.1007/s10549-012-2349-1. [PubMed: 23225142].
 42. Mock V. Body image in women treated for breast cancer. *Nurs Res.* 1993;**42**(3):153-7. [PubMed: 8506164].
 43. Speck RM, Gross CR, Hormes JM, Ahmed RL, Lytle LA, Hwang WT, et al. Changes in the Body Image and Relationship Scale following a one-year strength training trial for breast cancer survivors with or at risk for lymphedema. *Breast Cancer Res Treat.* 2010;**121**(2):421-30. doi: 10.1007/s10549-009-0550-7. [PubMed: 19771507].
 44. Fallbjork U, Rasmussen BH, Karlsson S, Salander P. Aspects of body image after mastectomy due to breast cancer - a two-year follow-up study. *Eur J Oncol Nurs.* 2013;**17**(3):340-5. doi: 10.1016/j.ejon.2012.09.002. [PubMed: 23083641].
 45. Moradi Manesh F, Ahadi H, Jomehri F, Rahgozar M. The Relationship of Body Image with Psychological Distress in Women with Breast Cancer [in persian]. *Armaghane danesh.* 2012;**17**(3):196-204.
 46. Lam WW, Li WW, Bonanno GA, Mancini AD, Chan M, Or A, et al. Trajectories of body image and sexuality during the first year following diagnosis of breast cancer and their relationship to 6 years psychosocial outcomes. *Breast Cancer Res Treat.* 2012;**131**(3):957-67. doi: 10.1007/s10549-011-1798-2. [PubMed: 21971728].
 47. Cohen M, Mabjish AA, Zidan J. Comparison of Arab breast cancer survivors and healthy controls for spousal relationship, body image, and emotional distress. *Qual Life Res.* 2011;**20**(2):191-8. doi: 10.1007/s11136-010-9747-9. [PubMed: 20859767].
 48. Kim KR, Chung HC, Lee E, Kim SJ, Namkoong K. Body image, sexual function and depression in Korean patients with breast cancer: modification by 5-HTT polymorphism. *Support Care Cancer.* 2012;**20**(9):2177-82. doi: 10.1007/s00520-011-1329-z. [PubMed: 22134442].