Original Research Article

Association of Anxiety, Depression, and Body Image Disorder with Pain-Related Disability in Post-Mastectomy Breast Cancer Patients

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ABSTRACT

Introduction: Breast cancer and its treatment have notable adverse effects on patients' body image, which could result in disability and psychological distress. Therefore, the present study investigated the association of anxiety, depression, and body image disorder with pain-related disability in post-mastectomy female breast cancer patients. **Materials and Methods:** This cross-sectional study was conducted on 137 post-mastectomy female breast cancer patients referred to two hospitals in Tehran, in 2015. Demographic data were collected, and all subjects completed questionnaires for patients with cancer, pain disability index and hospital anxiety and depression scale. Validity and reliability of all questionnaires used in the study had been verified previously. **Results:** There were significant inverse correlations between depression and body image ($r=-0.24$, $P<0.01$), anxiety and pain related disability ($r=0.25$, $P<0.01$), and body image and pain-related disability ($r=0.47$, $P<0.001$). Multiple regression analysis showed that anxiety ($B=0.29$, CI=0.97-3.94) and body image disorder ($B=0.53$, CI=0.81-1.62) were significantly correlated with pain-related disability after adjusting the age of patients and treatment period. **Conclusions:** Body image and anxiety are significantly correlated with pain-related disability. In addition, there is a significant correlation between body image and depression in post-mastectomy patients. Thus, anxiety and body image could be considered as risk factors of pain-related disability regardless of the treatment course and demographic variables. Identification of breast cancer patients with psychological disorders and disturbed body image seems beneficial for preventing pain-related disability after mastectomy.

KEYWORDS: Breast cancer, Mastectomy, Body Image, Mental health, Pain

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INTRODUCTION

Breast cancer is the most common cancer among women worldwide [1]. Its incidence rate varies from 19.3 per 100,000 women in Eastern Africa to 89.9 per 100,000 women in Western Europe [2]. The prevalence of breast cancer is expected to rise in Iran in the coming decades due to change in the pattern of risk factors and demographic characteristics [3]. Treatment of breast cancer generally includes various long-term interventions that usually involve primary surgery and adjuvant therapy including chemotherapy, radiotherapy, and hormone therapy [4]. These treatments usually have serious side effects. For instance, mastectomy can cause breast asymmetry, body posture changes, wounds and sensitive nipple, which may all affect the body image permanently [5]. Side effects of chemotherapy include hair loss, weight fluctuation, nail changes and early onset of menopause [6]. Radiotherapy alone or in combination with chemotherapy can cause skin reactions and discoloration and long-term neurological changes [7].

Holistic care is based on the idea that in human beings, the whole is greater than the sum of its parts and that mind and spirit affect the body [8]. Mastectomy can result in a permanent change to the appearance of women, even if the patient goes under breast reconstruction [9]. Female breast has been

regarded as the symbol of femininity, and removal of this organ by mastectomy is a traumatic experience for cancer patients that could influence their sexual relationship and self-image [10]. Moreover, breasts also represent an ideal female beauty and are symbols of motherhood [11, 12].

Studies have shown that many breast cancer patients have psychological reactions such as denial and anger or extreme fear toward the disease and treatment process. These psychiatric disorders especially anxiety and depression worsen the disease course and treatment outcomes [13]. Despite recent advancements in cancer treatment, the pain and fear of the disease still remain a problem [14]. The prevalence of clinical depression and anxiety disorders in patients with breast cancer has been reported to be 20.59% and 16%, respectively [15]. The strongest predictors for anxiety and depression in breast cancer patients are weak family relationships, incompatibility issues, conflict resolution, pain, and fatigue [16]. It has been demonstrated that psychological factors such as anxiety and depression play an important role in induction and worsening of pain [17]. Studies have reported that anxiety, depression, somatization, and sleep problems are independently associated with post-surgery pain [18]. Most studies have been focused on assessment of anxiety and depression in chronic pain after surgery, while few studies have used a biopsychosocial approach for the assessment and management of pain [19]. Women's body image changes after mastectomy, consequently causing some problems in these individuals. A study showed that post-mastectomy patients experience more clothing and body image issues [20]. The surgery also influences the physical ability and daily activities of individuals [21].

Although psychological disorders are common in patients with breast cancer, their management has been often neglected as an aspect of quality clinical care. Identification of these common mental health problems and related variables can be useful for designing more effective treatment strategies with no significant effect on quality of life of patients. Therefore, the present study investigated the relationship of anxiety, depression, and body image disorders with pain-related disability in women with breast cancer after mastectomy.

MATERIALS AND METHODS

Participants and Procedure

This cross-sectional study was done on 137 women with breast cancer referred to Shohadaye Tajrish and Tamin Ejtemaie hospitals in Tehran, in 2015. Subjects were enrolled through targeted sampling. Subjects were breast cancer patients who underwent mastectomy. Subjects with other types of cancer, metastasis, mental disorders, and pain before cancer were excluded from the study. The study was approved by the ethics committee of the Golestan University of Medical Sciences (code: 911201118), and written consent was obtained from all participants. Demographic information including age, occupation, level of education, and history of mastectomy were recorded. All participants responded to a standard self-report questionnaire.

Body Image evaluation

For this purpose, we used the body-image questionnaire for patients with cancer developed by Hopwood et al. [22] . The questionnaire has 10 items including awareness of appearance, less physical attractiveness, less womanhood, problem in looking at naked body, less sexual attractiveness, stay away from people, body incompleteness, body dissatisfaction and dissatisfaction with scars. The mentioned questionnaire was translated from English to Persian by two translators and then back translated by two native translators. Both translators were experienced psychology professionals who were fluent in both English and Persian. Total scores were used in this study and Cronbach's Alpha was 0.84.

Pain disability index (PDI)

PDI was scored from 0 to 10 and included areas of responsibility for home and family, hobbies, social activities, job, self-care, activities for life and sexual activity. PDI

index has been used in clinical studies, especially breast cancer studies. Total scores were used in this study and Cronbach's alpha of 0.79 was obtained [23].

Hospital Anxiety and Depression Scale (HADS)

HADS was used to assess depression and anxiety in patients with breast cancer. The scale comprised of seven items about depression and seven items about anxiety. Internal consistency (Cronbach's alpha) has been reported 0.78-0.85 for anxiety subscale and 0.7-0.86 for depression subscale in Iranian studies [1,2]. The validity of HADS was reported to be acceptable for clinical studies [2].

Data Analysis

Data were analyzed by SPSS (version 16). Normal distribution of data was evaluated by Kolmogorov-Smirnov test. Correlation coefficient was used to assess association between anxiety, depression, body image, and pain-related disability. In the multiple linear regression, PDI was considered as a dependent variable.

RESULTS

The mean age of subjects was 50.81± 10.84 years. Average time of assessment after mastectomy was 7.33 ± 2.12 months. Majority of participants were homemakers (88%) and illiterate or with elementary education (79%). Moreover, the patients experienced tinkling (31%), prickle (24%), burning sensation (33%), and pure pain (10%), while 2% of the subjects reported no pain.

There was a significant relationship between pain-related disability and anxiety. However, no association was found between pain-related disability and depression. In addition, we found a significant association between body image and pain-related disability (Table1).

Table 1. Correlation between anxiety, depression, body image, and pain-related disability

	Anxiety	Depression	Body Image	Pain Disability
Anxiety	1	0.26**	-0.04	0.25*
Depression		1	-0.24*	0.02
Body Image			1	0.47**
Pain Disability Index				1

* P<0.01, **P<0.001

Based on the results of multiple regression analysis, anxiety (B=0.29, CI=0.97-3.94) and body image (B=0.53, CI=0.81-1.62) were significantly correlated with pain-related disability after mastectomy (Table 2).

Table 2. Linear regression analysis of anxiety and body image in relation to pain-related disability

Predictor variables*	B	SE	Beta	t	P-value (95% CI)	$Adjusted\ R^2$
Anxiety	2.46	0.75	0.29	3.29	0.001 (0.97-3.94)	
Body Image	1.22	0.21	0.53	5.96	0.0001 (0.81-1.62)	0.354

* Adjusted for age and time after surgery

DISCUSSION

In this study, we found a significant inverse relationship between body image and depression. In line with this finding, Reich et al. reported that body image disorders and sexual problems resulting from mastectomy can cause severe swings and depression [24].

There was also a significant association between the body image and pain-related disability. A study found that patients who have undergone mastectomy experience clothing issues and body image problems [20]. Mastectomy can deeply affect patients appearance and reduce body-esteem, leading to feelings of unworthiness, hopelessness, and low self-esteem [25]. Post-mastectomy patients' concern about feedback from the community about their body image leads to depression and anxiety that could worsen their pain [17].

In our study, there was a significant relationship between anxiety and pain-related disability. This finding is supported by results of Belfer et al. [18] and Schreiber et al. [26]. After controlling the confounding factors (age and time after mastectomy), anxiety and body image could predict 35% of pain-related changes in post-mastectomy patients. This finding is in line with studies of Belfer et al. [18], Schreiber et al. [26], and Jung et al. [27]. The high prevalence of anxiety and depression in patients with breast cancer could be related to the impact of mastectomy on body image, self-esteem, and sexual instinct. In a study by Tasmuth et al. [28], chronic pain affected the life of 50% of the subjects, and causes moderate to severe problems in 25% of the subjects. Pain could affect or limit various routine activities such as exercise, sex, and social activities, and consequently reduce quality of life.

CONCLUSION

Body image and anxiety are significantly correlated with pain-related disability. In addition, there is a significant correlation between body image and depression in post-mastectomy patients. Thus, anxiety and body image could be considered as risk factors of pain-related disability regardless of the treatment course and demographic variables. Identification of breast cancer patients with psychological disorders and disturbed body image seems beneficial for preventing pain-related disability after mastectomy.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

AUTHORS' CONTRIBUTION

Mohammad Aryaie wrote the methods and results sections. Danial Bagheri wrote the introduction. Rahman Berdi Ozouni-Davaji wrote the discussion. Sima Mostafshar, Eftekhar Bolukat and Reza Khodabakhshi helped with data collection and writing the manuscript.

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