

## RESEARCH COMMUNICATION

# Impact of Body Image on Quality of Life and Mood in Mastectomized Patients and Amputees in Turkey

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### Abstract

**Background:** The aim was to investigate the impact of loss of the breast on body image, as well as the relationship of the body image with quality of life and severity of the depression, comparing mastectomized patients with those with an apparent limb loss (extremity amputation). **Methods:** Demographic data, and the side of the tissue/limb loss for mastectomy and transtibial amputation patients were recorded. Postoperative shoulder range of motion limitations of the operated-side in mastectomized patients, and postoperative knee flexion contracture in patients with amputation were evaluated. All patients were asked to complete Body Image Scale, Beck Depression Inventory, and Short Form-36. **Results:** All of the 40 patients in the mastectomized group were female. In the amputation group, 4 (10.8%) patients were female and 33 (89.2%) were male. Body-image scores in mastectomized and amputation groups were  $98.7 \pm 26.5$ , and  $77.2 \pm 19.7$ , respectively ( $p < 0.05$ ). Physical-function scores of quality-of-life were significantly lower in the amputation group. For both groups, a significant positive relationship was evident between body-image and depression ( $r = 0.327$  and  $r = 0.574$ , respectively). There were also significant negative relationships between body-image and physical role limitations ( $r = -0.395$ ) and mental health ( $r = -0.335$ ) in the mastectomized group, and between body-image, and emotional role limitations in the amputation group ( $p < 0.05$ ). **Conclusions:** Although mastectomy does not result in loss of physical function, distortion of body image perception is worse than that caused by extremity amputation, and distortion of the body image affects the quality of life and mood negatively in mastectomized patients.

**Keywords:** Body image - lower extremity amputation - mastectomy - QoL - mood

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### Introduction

Body image perception is the image that is generated in the mind by perceiving physical appearance of the body, in other words how people view their bodies (Breakey, 1997a). Body image is a dynamic perception that is influenced by experiences and psychological status of the people, as well as emotional factors (Tatar, 2010).

It was reported that tissue or limb loss resulting in body image changes can affect psychological status of the patients and may disturb body perception (Hartl et al., 2003; Mayer et al., 2008), and also this condition may affect compliance to rehabilitation period, participation to physical activities and quality of life (QoL) negatively, as well as results in functional and social adaptation problems (Racy, 1989; Fisher et al., 1998; Wetterhahn, 2002; Safaz et al., 2010).

While breast cancer is the most common cancer among women (Burckhardt et al., 2005), many of the amputations are performed on men and in lower extremities (Livneh et al., 1999). In addition to psychological effects of a

life-threatening disease, mastectomized patients face to loss of a tissue that is a symbol of femininity and sexuality, and also experience physically troublesome treatment modalities, such as surgery, chemotherapy, radiotherapy and adjuvant therapies (Helms et al., 2008). Similar to psychological and physical problems experienced by patients receiving breast cancer treatment, amputee patients also not only have a physical loss but also experience a serious loss resulting from changes in functions, sensations and body image (Wetterhahn, 2002). In acquired amputation, patient have to balance three different body images: the normal body image before amputation, the new body image with extremity loss and the new body image with the use of prosthesis (Breakey, 1997b). It was reported that difficulty of an individual accepting his/her body with an amputation or prosthesis results in refusing the use of prosthesis and thus decreased physical activity (Racy, 1989).

In addition to studies examining the negative impact of the loss of a breast, which is an important tissue for women as a femininity and sexuality symbol, on body image and

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QoL (Alicikus et al., 2009; Sackey et al., 2010; Hopwood et al., 2000; Schover, 1991), there are also a number of studies examining the impact of extremity amputation, which causes loss of the physical function, on body image and QoL (Fisher et al, 1998; Wetterhahn, 2002; Gallagher et al, 2007; Tatar, 2010). However, to our knowledge, there are no studies examining the relationship of the QoL and mood with the body image perception disturbance in mastectomized patients, and amputees together, both of which result in change of body configuration, but involve different tissue/limb losses.

This study was aimed to determine the body image satisfaction, and to investigate the relation of body image with the QoL and mood in mastectomized patients, and lower extremity amputees.

## Materials and Methods

Seventy patients who underwent a mastectomy operation for breast cancer and referred to our Physical Therapy and Rehabilitation Department for preventing upper extremity problems resulting from the treatment and for planning the exercise program were evaluated. Inclusion criteria for patients with breast cancer were as follows: age >18 years, treatment with mastectomy, having no metastatic diseases, and a cognitive function sufficient to complete the questionnaires. Exclusion criteria were as follows: patients with a metastatic disease, a previous diagnosis of a cancer other than breast cancer, and patients with severe brain injury or dementia. Of the 70 patients referred to our department, 25 of patients were excluded because of treatment with breast-conserving surgery and 5 of patients because of a diagnosis of metastatic disease.

Fifty-three patients who had a lower extremity amputation and referred to our department for prescribing prosthesis or participating to a rehabilitation program and gait training were evaluated. Inclusion criteria for amputee patients were as follows: age >18 years, patients with an acquired transtibial amputation and a cognitive function sufficient to complete the questionnaires. Of the 53 amputee patients, 2 were excluded because of being under the age of 18, one because of having a congenital amputation and 13 because of having an amputation at a level other than transtibial.

Gender, age, body weight (kg), marital status (single / divorced / married), education level (primary-middle school / high school-college), employment (housewife / retired / worker-official / unemployed), dominant extremity (right / left) and the side of the limb loss (right / left / bilateral) data for 40 mastectomized patients (mastectomized group) and 37 patients with transtibial amputation (amputation group) were recorded. Medical records were reviewed for the stage of the breast cancer in mastectomized group and for the reason of amputation in amputation group.

The patients in the mastectomized group were asked if they had undergone breast reconstruction after mastectomy. Presence of external breast prosthesis (present / absent) was recorded in all patients.

Mastectomized patients were evaluated for postoperative limitations of shoulder joint range of

motion, which can occur in the extremity of the operated-side. Shoulder joint range of motion was measured in the flexion and abduction planes and in both extremity by a manual goniometry and expressed in degrees. Differences  $\geq 25$  degrees compared to contralateral extremity was considered as limitation of shoulder joint range of motion.

Patients with amputation were evaluated for knee flexion contractures that can occur postoperatively. Knee joint range of motion was measured in flexion and extension planes, and the limitation of extension with  $\geq -10$  degrees were considered as presence of knee flexion contracture.

All patients were asked to complete Body Image Scale, Beck Depression Inventory, and Short Form-36 (SF-36).

Body Image Scale measures just how an individual is pleased with various parts or functions of his/her body. This scale includes 40 items, which of each relates to a part (e.g. arm, leg, face) or a function (e.g. level of sexual function) of the body or an organ. Each item is scored from 1 to 5 points (1=very much pleased, 2=fairly pleased, 3=not sure, 4=unpleased, 5=not at all) and the final score is the sum of the 40 items, ranging from 40 to 200 in this scale, which do not have a cut-off point. Higher scores represent high levels of displeasure (Jourard et al., 1955). Beck Depression Inventory form has 4 choices for each of 21 symptom categories (Beck et al., 1961; 1988). It is asked to mark the most appropriate statement which represents how he/she has been feeling in the last week, including the testing day. Each item is rated on a 4-point scale ranging from 0 to 3 and the maximum total score is 63. Higher total scores indicate more severe depressive symptoms. When adapting Beck Depression Inventory into Turkish, cut-off scores were evaluated and it was noticed that a cut-off score of  $\geq 17$  discriminates the depression that will require treatment from that will not, with  $\geq 90\%$  accuracy. It was also reported that a score of 10 represents at least mild depression (Beck et al., 1961).

Short Form-36 (SF-36) was used to assess the QoL (Ware et al., 1992). It is a self-assessment measure and consists of 36 items that assess 8 dimensions: physical function, social function, pain, energy/vitality, emotional role disability, physical role disability, mental health, and general health. Each subscale is rated from 0 to 100, with higher scores indicating a better health state. It was reported that SF-36 can be used in QoL assessment of the individuals with physical disorders.

Statistical procedures were performed using Microsoft Office SPSS 17.0 software. Student's t test was used to compare the numeric data between groups, and chi-square test to compare categorical variables. Correlation analyses (Pearson correlation coefficient (r) values) were used to examine the associations between the variables. p values less than .05 were considered significant.

## Results

All of the 40 patients in the mastectomized group were female. In the amputation group, 4 patients (10.8%) were female and 33 (89.2%) were male ( $p < 0.05$ ). There were no significant differences between groups with regard to age, body weight, education level, marital status, side

**Table 1. Comparison of Age, Body Weight, Education Level, Presence of Contracture on the Side of Tissue or Limb Loss Between Groups**

	Patients with mastectomy (n=40)	Patients with transtibial amputation (n=37)	p
Gender			
Female	40 (100%)	4 (10.8%)	0.001*
Male		33 (89.2%)	
Age	49.5±10.4 (28-82)	55.4±17.1 (18-80)	0.072
weight(kg)	70.2±11.1	75.0±12.6	0.078
Marital status			
Married	30 (75%)	25 (67.6%)	0.086
Divorced	4 (10%)	10 (27.0%)	
Single	6 (15%)	2 (5.4%)	
Education level			
Primary-secondary school	27 (67.5%)	31 (83.8%)	0.098
High school-collage	13 (32.5%)	6 (16.2%)	

\*p<0.05

**Table 2. Comparison of Body Image Scale, Beck Depression Inventory, Subscales of Quality of Life Between Groups**

	Patients with mastectomy (n=40)	Patients with transtibial amputation (n=37)	p
Body image scale	98.7±26.5	77.2±19.7	0.001*
Beck depression inventory	12.2±6.6	10.0±6.7	0.154
Quality of life (SF-36)			
Physical function	60.3±25.2	34.9±30.8	0.001*
Social function	51.6±15.6	56.8±14.9	0.139
Bodily pain	63.1±26.2	69.1±24.5	0.297
Energy-vitality	59.7±13.1	64.1±21.2	0.284
Emotional role limitation	51.7±44.6	27.0±36.7	0.010*
Physical role limitation	35.6±39.6	26.4±36.8	0.291
Mental health	63.7±13.5	63.5±18.2	0.953
General health	63.7±13.5	51.2±18.9	0.511

SF-36:Short Form-36; \*p<0.05

of dominant extremity, and limitations of shoulder or knee range of motion in the extremity of the operated-side (p>0.05) (Table 1). With regard to employment, 32 (80%) patients were housewives, 5 (12.5%) were worker-official and 3 (7.5%) were retired in the mastectomized group, whilst 4 (10.8%) patients were housewives, 3 (13.1%) were worker-official, 28 (75.7%) were retired, and 2 (5.4%) were unemployed in the amputation group (p<0,05). The side of the tissue/limb loss were right in 18 (45%) and 18 (48.6%) patients, left in 20 (50%) and 11 (29.7%), and bilateral in 2 (5%) and 8 (21.6%) in the mastectomized and amputation groups, respectively (p<0,05).

Mastectomy had been performed on all of the patients in the mastectomized group for invasive breast cancer. In the amputation group, the reason for amputation was peripheral vascular insufficiency in 28 (75%) patients and traumatic injury in 9 (25%). Eighteen of 28 (48.6%) amputations performed for peripheral vascular insufficiency were diabetes-related.

There were no patients with breast reconstruction in the mastectomized group. While 32 (80%) patients in the mastectomized group were wearing external breast

prosthesis, the remaining 8 (20%) patients were not. In the amputation group, 16 (43.2%) patients were wearing prosthesis and 21 (56.8%) were not. Wear rates of prosthesis was significantly higher in the mastectomized group compared to the amputation group (p<0,05). On the other hand, although a significant negative relationship was found between wearing prosthesis and body image in the mastectomized group (p<0,05, r= -0,639), this relationship was not true for amputation group (p>0,05).

Mean body image scores were 98.7±26.5, and 77.2±19.7 (p<0,05) and mean depression scores were 12.2±6.6, and 10±6.7 (p>0,05) in the mastectomized and amputation groups, respectively. Subscale scores of QoL are demonstrated in Table 2. Subscale scores of physical function and emotional role disability were significantly lower in amputation group compared to mastectomized group (p<0,05). For the mastectomized and amputation groups, a significant positive relationship between body image and depression level (r=0.327 and r=0.574, respectively), and significant negative relationships between body image scores and QoL physical function (r= -0.414 and r= -0.372, respectively), pain (r=-0.317 and r=-0.548), energy/vitality (r=-0.461 and r=-0.362), and general health perception (r=-0.345 and r=-0.428) subscores were found (p<0,05). There were significant negative relationships between body image scores and physical role limitations (r=-0.395) and mental health (r=-0.335) subscores in the mastectomized group, and between body image scores and emotional role limitations subscores in the amputation group (p<0.05).

No significant relationships were found between body image scores and QoL social function and emotional role limitations subscores in the mastectomized group, as well as between body image scores and QoL social function, physical role limitations, and mental health subscores in the amputation group.

## Discussion

Our results revealed that body image disturbances in mastectomized, and amputee patients, who experience different tissue or limb losses, is related to QoL and mood, but body image distortion is significantly worse in mastectomized patients.

A significant difference was found between the gender of two patient groups as expected, because breast cancer is the commonest cancer among women and lower extremity amputation is more common in men than women.

It was reported that local excision and breast-conserving surgery, the two surgical treatment options for early stage (stage I and II) breast cancer, produce similar outcomes in survival, thus it is important to choose the treatment option that has less negative impact on QoL (Figueiredo et al., 2004). The effects of the concordance between treatment received and surgical treatment preferences on posttreatment body image in 563 patients aged 67 years or older were evaluated by Figueiredo et al (2004). They found that patients who received breast-conserving surgery had significantly less body image concerns than who underwent mastectomy at 2 years after surgery, and that women who preferred breast-

conserving surgery because of physical appearance but underwent mastectomy had worst body image concerns and significantly poorer SF-36 mental health scores. That study also demonstrated that prior assumptions about body image not being important to older women might not always be true. Interestingly, even though 31% of patients cited physical appearance as important in making a treatment decision, only 7.5% of the patients had undergone a reconstruction. Authors have concluded that it is unclear whether the low rate of reconstruction was a result of lack of interest or lack of being offered reconstruction.

In a retrospective study, body image concerns of 62 patients who underwent mastectomy, 58 patients who had immediate breast reconstruction after mastectomy, 58 patients who had late breast reconstruction after mastectomy and 90 patients who received breast-conserving surgery were assessed by Body Image Scale and Body Image Visual Analog Scale at 14 months after surgery (Mock, 1993). Authors reported that women who received breast-conserving surgery had significantly higher levels of satisfaction with body image after surgery compared to other patients who underwent mastectomy.

In several other studies, it was demonstrated that body image concerns, feeling of physical attraction and body image were more negatively affected in patients who underwent mastectomy compared to those who received breast-conserving surgery for the treatment of breast cancer (Lasry et al., 1987; Mock, 1993; Figueiredo et al., 2004).

Since none of our mastectomized patients had breast reconstruction, effects of breast reconstruction on body image perception could not be assessed in our study. Body image disturbance was worse in the mastectomized patients, although 80% of mastectomized patients were wearing external prosthesis while only 56.8% of amputee patients were wearing prostheses. It was considered that prosthesis, which takes over physical functions of the missing extremity in amputee patients, has a positive impact on body image, whereas wearing external breast prosthesis is inefficient in improving body image perception, possibly because of not replacing the femininity and sexuality of the missing breast tissue.

Body image concerns are reported to be significantly associated with depression (Rybarczyk et al., 1995). Although our mastectomized, and amputee patients had similar and lower levels of depression, there was a significant positive relationship between body image, and depression for both patient groups.

In a study examining the relationship between body image and level of participation in physical activities in individuals with lower extremity amputations, a positive relationship was found between body image, and level of participation in physical activities (Wetterhahn, 2002). However in our study, although QoL physical function subscores of amputee patients were lower than mastectomized patients, their body image scores were better than mastectomized patients. Thus, we concluded that lower physical function subscores in amputee patients might be associated with not wearing a prosthesis or disuse of prosthesis due to comorbid diseases, rather than body

image disturbances.

It was reported that nearly 50% of lower extremity amputations are performed on diabetic patients and that reamputation is performed nearly half of the diabetic amputee patients in the same or contralateral extremity (Coffey et al., 2009; Reiber et al., 1995). In our study, number of the bilateral tissue/limb losses was significantly higher in amputee patients compared to mastectomized patients. This finding might be attributed to the fact that amputations in 18 (48.6%) of our amputee patients was related with diabetes mellitus, and that most of them had reamputation due to comorbid diseases.

Interestingly, although the number of patients with bilateral tissue/limb losses were lower in the mastectomized group, body image perceptions of them were significantly worse than amputation group. It was reported that trying to save extremity, amputating a limited part of an extremity and having a serial surgical procedures can take a long time, and this long elapsed time can reduce impact of the body image perception disturbances in psychosocial adjustment (Coffey et al., 2009). Since the fact that nearly half of our amputee patients had diabetes-related lower limb amputations, the finding of better body image in amputee patients might be attributed to this report.

There are some limitations of our study. Firstly, our sample size was small. Secondly, we did not use disease-specific body image scales for mastectomized, and amputee patients, who have a loss of tissue/limb as a common feature. Amputee Body Image Scale exists for assessing the body image perception of patients with lower extremity amputation and the Turkish version of the scale has acceptable reliability and validity (Breakey, 1997b, Bumin et al., 2009). Several other scales assessing body image perception of cancer patients (Hopwood et al., 2001) and of patients with breast cancer (Hartl et al., 2003; Bredin, 1999) were used and suggested in studies. Amputee Body Image Scale consists of questions related to wearing prosthesis and gait, as well as concerns about noticing of other people their amputations, prostheses or gait defects (Breakey, 1997b). Body image questions that are used for mastectomized patients included in several questions concerning the impact of surgery on sexual attractiveness and femininity (Sackey et al., 2010). We used a more general applicable body image scale in both of our groups, because it was not possible to use specific body image scales for assessment of mastectomized or amputee patients.

In conclusion, our results revealed that body image perception is worse in mastectomized female patients even compared to patients with lower extremity amputations which limit the physical function of patients. As body image disturbances affect quality of life negatively in breast cancer patients who will undergo mastectomy operation, active participation of patients to the making a decision for treatment process, giving a preoperative information about what changes will be expected in mastectomized body shape, and about breast reconstruction, as well as providing a psychiatric support when it is needed might greatly reduce negative impacts on body image, and quality of life.

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