

# Impact of Surgery Type on Quality of Life in Breast Cancer Patients

## Meme Kanseri Nedeni ile Mastektomi Yapılmış Hastalarda Cerrahi Tedavinin Yaşam Kalitesi Üzerine Olan Etkileri

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### ABSTRACT

**Objective:** Breast cancer can lead to alterations in quality of life of the patients. The aim of this study is to evaluate the changes in quality of life of the female patients who had undergone surgical treatment for breast cancer.

**Materials and Methods:** A total of 250 female patients (breast-preserving surgery (BPS), n=27, 11%; modified radical mastectomy (MRM), n=194, 77%, and simple mastectomy (SM), n=29; 11%) aged between 28-55 years (47.4±6.4 yrs) were included in the study. Patient information, demographic characteristics, income, and treatment modalities applied were recorded. Validated Turkish versions of EORTC QLQ-C30, and EORTC-BR23 questionnaires were used for all patients.

**Results:** Breast-preserving surgery has a more favorable impact on general well-being, physical role, cognitive, psychological, and social functions, and symptom scale scores. When the identical parameters were taken into consideration, relatively favorable outcomes of BPS on the patients were observed relative to mastectomized patients. Besides, though not statistically significant, BPS has more patient-friendly effects on sexual function and sexual satisfaction in comparison with mastectomy. Patients with advanced stage disease and elder patients had more unfavorable health related quality of life (HRQoL) scores than younger patients, and those in their early stages of breast cancer.

**Conclusion:** Quality of life of BPS patients is less adversely affected relative to mastectomized patients. In the decision-making process, quality of life should be taken into consideration.

**Key words:** Breast cancer, mastectomy, quality of life, sexual activity, psychosocial factors

### ÖZET

**Amaç:** Meme kanseri yaşam kalitesi değişikliklerine yol açabilir. Bu çalışmanın amacı meme kanseri nedeni ile cerrahi tedavi yapılmış kadın hastalarda cerrahi tedavi sonrası yaşam kalitesi değişikliklerinin değerlendirilmesidir.

**Yöntem ve Gereçler:** Çalışmaya 28-55 (47.4±6.4) yaş arası 250 kadın hasta (meme koruyucu cerrahi (MKC) yapılan 27 hasta (%11), modifiye radikal mastektomi (MRM) yapılan 194 hasta (%77) ve basit mastektomi (BM) yapılan 29 hasta (%12)) dahil edildi. Hastalara ait demografik, gelir düzeyleri ve tedavi bilgileri kaydedildi. Hastalara Türkçe EORTC QLQ-C30 ve -BR23 anketleri uygulandı.

**Bulgular:** Genel iyilik hali, fiziksel-rol-bilişsel-ruhsal-sosyal fonksiyonlar ve semptom ölçeklerinde MKC yapılanların mastektomi yapılanlara göre daha olumlu etkilendiği gözlemlendi. MKC yapılan hastaların aynı parametreler dikkate alındığında mastektomi yapılan hastalara göre daha olumlu etkilendikleri gözlemlendi. MKC istatistiksel olarak anlamlı olmasa da cinsel fonksiyon ve cinsel doyum parametreleri göz önüne alındığında mastektomiye göre daha olumlu etkilere sahipti. İleri evre hastalığı olanlar erken evre hastalara göre, genç yaş grubundaki hastalar ileri yaştakilere göre daha olumsuz yaşam kalitesi göstergelerine sahiptiler.

**Sonuç:** Meme koruyucu cerrahi yapılan hastalarda mastektomi yapılanlara göre yaşam kalitesi daha az olumsuz etkilenmektedir. Tedavi yöntemlerine karar verilirken hastanın yaşam kalitesi değişiklikleri dikkate alınmalıdır.

**Anahtar sözcükler:** Meme kanseri, mastektomi, yaşam kalitesi, cinsel aktivite, psikososyal faktörler

### Introduction

Breast cancer is the most frequently seen cancer among women, and breast cancer-related deaths rank third among all cancer deaths (1). Operations for breast cancer disfiguring body image or impairing functions of body parts, and especially surgical interventions aiming at facial, and mammary regions have profound psychological effects on women's body image, quality of life, and sexual life (2). Anxiety, depression, anger, guiltiness, fear, and social isolation are the mostly encountered post-mastectomy problems (2).

World Health Organization (WHO) defines quality of life as 'individuals' perception of their position in life within the whole context of the culture and value systems of the social environment in which they live and in relation to their goals, expectations, standards and concerns (3).

Many indicators should be considered in the measurement of quality of life. Among them, 'functional capacity' indicates the ability to perform daily living activities, and the level of physical activity. "Social function" reflects the ability of an individual to interact with other

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members of his/her family, friends, and other people, while “emotional function” reflects the level of anxiety induced by side effects developed as a result of treatments applied, and disease-related symptoms such as pain (4).

Cancer can be defined as a chronic disease that involves physical inadequacies, and psychological problems with periods of remissions, and exacerbations, and creates difficulties in maintaining short and long-term compliance (5). Quality of life is one of the important concepts not to be forgotten for cancer patients during their lives, and throughout their curative and/or palliative treatments.

In parallel with the advances in the treatment of breast cancer with their favorable effects on its incidence, and survival rates, detailed comprehension of the problems encountered by patients during their treatment, disease, and remissions portends critical importance.

Various questionnaire forms have been used in oncology to assess quality of life of cancer patients. European Organization for Research and Treatment of Cancer (EORTC) QLQ-C30 questionnaire forms contain 30 items which can be applied on every type of cancer. EORTC QLQ-BR23 questionnaire form has been designed especially for breast cancer patients, and contains 23 items. The participants mark one answer among four alternatives (1-not at all; 2-a little, 3- quite a bit 4- very much) (6-8).

The aim of this study is to investigate the changes in the quality of life, and social, psychological, and sexual life of the patients who had undergone breast surgery for breast cancer using EORTC QLQ-C30, and EORTC QLQ-BR23 questionnaire forms.

## Materials and Methods

Breast cancer patients treated, and followed-up by the Mersin University department of medical oncology, the years 2000, and 2010 were investigated. The female patients who survived after modified radical or simple mastectomy or breast-preserving surgery, and volunteered to fill the consent forms were included in the study. The study participants were also literate, married or had a sexual partner without any concomitant medical, and/or psychological disorder that impair(s) mental and/or bodily functions of the patients. Patients who had not undergone primary breast cancer surgery, those with metastatic breast cancer or illiterate cases were not included in the study. Ethnic and geographic differences were not taken into consideration for all study participants. The patients' files were retrospectively analyzed, and patient-related data (information concerning age, address of correspondence, social, and demographic characteristics, income, and educational levels, menopausal state, grade, and stage of the tumor, adjuvant and/or neoadjuvant surgical, and medical treatments) were recorded.

The patients were categorized into 3 groups based on their ages as follows: Group 1; 28-35 years; Group 2: 36-45 years, and Group 3: 46-55 years (Table 1). The patients were interrogated during outpatient control visits. After obtaining their volunteer consent forms, the questionnaire forms were filled up.

In our investigation, Turkish version (v.3.0) of the mostly preferred EORTC QLQ-C30 and EORTC QLQ-BR23 questionnaire forms were used.

Mersin University Ethic Committee approved our study in 03.11.2010 by number: 71. Each patient signed detailed informed consent forms.

**Table 1. Demographic characteristics of the patients**

<b>Age (yrs), (n, %)</b>	
All groups (mean±SD; range)	47.4±6.4 (28-55 years)
Group 1 (28-35 years) (n, %)	19 (7.6%)
Group 2 (36-45 years) (n, %)	69 (27.6%)
Group 3 (46-55 years) (n, %)	162 (64.8%)
<b>Marital status, (n, %)</b>	
Married	237 (94.8%)
Single	4 (1.6%)
Divorced	9 (3.6%)
<b>Educational level, (n, %)</b>	
Primary school	171 (68.4%)
Lycée	66 (26.4%)
High school, university	13 (5.2%)
<b>Occupation, (n, %)</b>	
Unemployed	213 (85.2)
Employed	37 (14.8)
<b>Income level (monthly wages), (n, %)</b>	
A (<750 TL)	49 (19.6)
B (750-1500 TL)	151 (60.4)
C (>1500 TL)	50 (20.0)
<b>Living Environment, (n, %)</b>	
Urban	178 (%71.2)
Rural	72 (%28.8)

## Statistical Analysis

One-way analysis of variance was used in comparisons between subgroups as for the variables as age groups, stage of the cancer, and type of the operation performed based on total subscale scores. For pairwise comparisons between groups demonstrating differences, Tukey HSD test was used. Cronbach's alpha coefficient was calculated to assess internal consistency of scale items. The test was deemed valid and reliable when a Cronbach coefficient of  $\geq 0.70$  was obtained. In all comparisons performed, type I error rate was determined as 0.05. In all comparisons, p values calculated below this level were considered significant. All analyses were realized using SPSS for Windows 11.5.1 statistical (SPSS Inc., USA) program.

## Results

A total of 250 eligible female patients who were followed up by the Mersin University department of medical oncology, and volunteered to participate in the survey were included in the study. Mean age of the study participants was 47.4±6.4 (28-55 yrs) years. Demographic data were summarized in Table 1.

Our patients had difficulty in answering the questions inquiring their libido, and income level. Questions related to sexual life, sexual pleasure, and income level were not answered by 5.2 (n=7), and 2.8 (n=7) percent of the patients, respectively.

Patients who had undergone breast conserving surgery (BCS), and simple mastectomy (SM) had more favorable outcomes relative to modified radical mastectomy (MRM) patients as assessed by EORTC

**Table 2. Comparison of types of surgery based on EORTC QLQ-C30 scale scores**

EORTC QLQ-C30	MRM n: 194	SM n: 29	BPS n: 27	P value
	Mean± SD	Mean± SD	Mean± SD	
<b>GLOBAL HEALTH STATE</b>				
General Well-being	8.7±2.7	9.8±2.5	11.5±1.7	<0.001
<b>FUNCTIONAL SCALES</b>				
Physical functioning	8.9±3.0	9.4±2.9	8.0±1.5	0.2
Role functioning	3.7±1.5	3.6±1.6	3.2±1.0	0.3
Cognitive functioning	3.6±1.5	3.5±1.4	3.3±1.0	0.6
Emotional functioning	8.7±3.2	8.0±2.9	7.1±1.8	0.3
Social functioning	4.6±1.8	3.9±1.8	3.3±1.1	<0.01
<b>SYMPTOM SCALES</b>				
Dyspnea	1.5±0.7	1.6±0.6	1.3±0.5	0.3
Nausea-vomiting	2.9±1.3	2.8±1.5	2.7±0.9	0.7
Loss of appetite	1.6±0.8	1.7±0.7	1.4±0.5	0.2
Sleep disorders	2.2±1.0	2.3±0.9	1.8±0.6	0.2
Pain	3.8±1.5	3.6±1.2	3.5±0.9	0.4
Fatigue	6.5±2.3	6.2±2.2	5.2±1.0	0.02
Constipation	1.6±0.8	2.0±1.0	1.5±0.6	0.01
Diarrhea	1.3±0.6	1.2±0.4	1.25±0.4	0.6
Financial difficulties	2.5±1.0	2.3±1.0	2.2±0.9	0.3

BPS: Breast preserving surgery; EORTC-QLQ: European Organization for Research and Treatment of Cancer, quality of life questionnaire; MRM: Modified radical mastectomy; SM: Simple mastectomy, SD: Standard deviation

QLQ-C30 questionnaire scales of social functioning (p<0.01), fatigue (p=0.02), constipation (p<0.01), and global quality of life (p<0.001). As for other functional scales as physical (p=0.2), cognitive (p=0.6), emotional (p=0.3), and role (p=0.3) functioning, MRM resulted in worse outcomes without any statistically significant difference from other breast cancer treatment modalities. Regarding these parameters, any statistically significant difference was not detected between SM, and BCS groups (Table 2, and Table 3).

Evaluations based on EORTC QLQ-BR23 scale scores have revealed that when compared with MRM patients, body image (p<0.001), future perspectives (p<0.001), arm symptoms (p=0.05), and hair loss (p<0.006) scores were more favorable in BCS, and SM patients. Three surgical procedures did not differ as for subgroups of sexual life, sexual pleasure, adverse effects of the treatments used, and breast symptoms (p>0.05) (Table 4 and Table 5).

When responses to EORTC QLQ-C30 questions were evaluated, and categorized according to age groups, alterations in cognitive functioning were relatively significant (p=0.02) in Group 3 without any significant intergroup difference as for other domains of the scale (Table 6). When responses given to EORTC QLQ-BR23 questionnaire items were evaluated based on age groups in Group 1, parameters of sexual life, and sexual pleasure, and in Group 2, those of body image, future perspectives, adverse effects of drugs, breast and arm symptoms, and

**Table 3. Comparison of mastectomy, and BPS based on EORTC QLQ-C30 scale scores**

EORTC QLQ-C30	MASTECTOMY n: 223	BPS n: 27	P value
	Mean±SD	Mean±SD	
<b>GLOBAL HEALTH STATE</b>			
General well-being	8.4±2.5	11.8±1.9	0.002
<b>FUNCTIONAL SCALES</b>			
Physical functioning	9.0±3.0	8.0±1.5	0.3
Role functioning	3.6±1.5	3.2±1.0	0.2
Cognitive functioning	3.6±1.5	3.3±1.0	0.7
Emotional functioning	8.6±3.2	7.1±1.8	0.07
Social functioning	4.5±1.8	3.3±1.1	0.002
<b>SYMPTOM SCALES</b>			
Dyspnea	1.5±0.7	1.3±0.5	0.25
Nausea-vomiting	2.9±1.3	2.7±0.9	0.82
Loss of appetite	8.9±2.7	11.0±1.8	0.001
Sleep disorders	2.2±0.9	1.8±0.6	0.14
Pain	3.8±1.5	3.5±0.9	0.46
Fatigue	6.5±2.3	5.2±1.0	0.007
Constipation	1.6±0.9	1.4±0.6	0.62
Diarrhea	1.7±0.8	1.6±0.8	0.4
Financial difficulties	2.4±1.0	2.2±0.9	0.2

BPS: Breast preserving surgery; EORTC-QLQ: European Organization for Research and Treatment of Cancer quality of life questionnaire, SD: Standard deviation

**Table 4. Comparison of surgical treatment alternatives based on EORTC QLQ-BR23 scale scores**

EORTC QLQ-BR23	MRM n: 194	SM n: 29	BPS n: 27	P value
	Mean± SD	Mean± SD	Mean± SD	
<b>FUNCTIONAL SCALES</b>				
Body image	10.6±3.7	8.5±3.5	7.4±2.2	<0.001
Sexual life	3.1±1.2	3.0±1.1	2.8±1.0	0.45
Sexual pleasure	1.6±0.7	1.5±0.7	1.4±0.6	0.5
Future perspectives	2.7±1.1	2.1±0.9	2.0±0.7	<0.001
<b>SYMPTOM SCALES</b>				
Adverse effects	13.9±4.4	13.8±3.8	12.1±2.7	0.1
Breast symptoms	6.8±2.4	6.7±2.3	5.8±1.7	0.1
Arm symptoms	5.9±2.0	5.5±2.0	5.0±1.2	0.05
Hair loss	2.5±1.1	2.4±1.1	1.8±0.5	0.006

BPS: Breast preserving surgery; EORTC-QLQ: European Organization for Research and Treatment of Cancer quality of life questionnaire; MRM: Modified radical mastectomy; SM: Simple mastectomy, SD: Standard deviation

hair loss were relatively more unfavorable. Group 3 had more favorable outcomes without any statistically significant intergroup differences (Table 7).

Table 5. Comparison of mastectomy, and BPS based on EORTC QLQ-BR23 scale scores

EORTC QLQ-BR23	MASTECTOMY n: 223	BPS n: 27	P value
	Mean±SD	Mean±SD	
FUNCTIONAL SCALES			
Body image	10.3±3.7	7.4±2.2	0.001
Sexual life	3.1±1.2	2.8±1.0	0.25
Sexual pleasure	1.6±0.7	1.4±0.6	0.25
Future perspectives	2.6±1.1	2.0±0.6	0.002
SYMPTOM SCALES			
Adverse effects	13.9±4.3	12.1±2.8	0.047
Breast symptoms	6.8±2.4	5.8±1.7	0.03
Arm symptoms	5.9±2.0	5.0±1.2	0.04
Hair loss	2.5±1.1	1.8±0.5	0.002

BPS: Breast preserving surgery; EORTC-QLQ: European Organization for Research and Treatment of Cancer quality of life questionnaire  
SD: Standard deviation

Table 6. Comparison of age groups based on EORTC QLQ-C30 scale scores

EORTC QLQ-C30	Group 1 n: 19	Group 2 n: 69	Group 3 n: 162	P value
	Mean±SD	Mean±SD	Mean±SD	
GLOBAL HEALTH STATE				
General well-being	9.2±2.1	8.6±2.8	8.9±2.7	0.1
FUNCTIONAL SCALES				
Physical functioning	8.8±3.3	9.2±2.9	8.8±2.8	0.6
Role functioning	3.0±1.1	3.8±1.5	3.6±1.5	0.09
Cognitive functioning	3.6±1.5	3.9±1.6	3.4±1.4	0.02
Emotional functioning	8.1±3.4	8.9±3.2	8.3±3.1	0.4
Social functioning	4.4±1.8	4.6±1.9	4.3±1.8	0.4
SYMPTOM SCALES				
Dyspnea	1.5±0.7	1.6±0.7	1.4±0.6	0.3
Nausea-vomiting	2.4±0.7	2.9±1.3	3.0±1.4	0.3
Loss of appetite	1.5±0.8	1.6±0.7	1.6±0.8	0.6
Sleep disorders	2.0±0.9	2.2±0.9	2.1±0.9	0.6
Pain	4.1±1.5	4.0±1.4	3.7±1.4	0.2
Fatigue	5.8±1.8	6.7±2.2	6.2±2.3	0.2
Constipation	1.4±0.7	1.8±0.9	1.6±0.8	0.2
Diarrhea	1.2±0.4	1.3±0.6	1.2±0.5	0.7
Financial difficulties	2.8±0.9	2.5±1.1	2.3±1.0	0.009

EORTC-QLQ: European Organization for Research and Treatment of Cancer quality of life questionnaire, SD: Standard deviation

Table 7. Evaluation of age groups based on EORTC QLQ-BR23 scale scores

EORTC QLQ-BR23	Group 1 n: 19	Group 2 n: 69	Group 3 n: 162	P value
	Mean±SD	Mean±SD	Mean±SD	
FUNCTIONAL SCALES				
Body image	10.3 ±3.4	10.7±3.7	9.7±3.8	0.2
Sexual life	3.3±1.2	3.0±1.1	3.1±1.2	0.3
Sexual pleasure	1.7±0.9	1.5±0.6	1.6±0.7	0.4
Future perspectives	2.6±1.0	2.8±1.1	2.5±1.1	0.25
SYMPTOM SCALES				
Adverse effects	12.8±4.4	14.8±4.1	13.4±4.1	0.06
Breast symptoms	6.6±2.4	7.3±2.3	6.5±2.4	0.06
Arm symptoms	5.6±2.4	6.1±2.0	5.6±1.9	0.2
Hair loss	2.4±1.2	2.7±1.1	2.4±1.1	0.1

EORTC-QLQ: European Organization for Research and Treatment of Cancer quality of life questionnaire, SD: Standard deviation

Table 8. Comparison of breast cancer stages based on EORTC QLQ-C30 scale scores

EORTC QLQ-30	STAGE 1 n: 53	STAGE 2 n: 128	STAGE 3 n: 69	P value
	Mean±SD	Mean±SD	Mean±SD	
GLOBAL HEALTH STATE				
General Well-being	9.3±2.2	9.3±2.9	8.9±2.9	0.6
FUNCTIONAL SCALES				
Physical functioning	8.8±2.7	8.6±2.9	9.5±3.0	0.08
Role functioning	3.5±1.2	3.6±1.4	3.8±1.7	0.5
Cognitive functioning	3.4±1.2	3.5±1.4	3.8±1.7	0.2
Emotional functioning	8.1±2.4	8.2±3.2	9.2±3.4	0.06
Social functioning	4.1±2.0	4.4±1.7	4.6±1.9	0.3
SYMPTOM SCALES				
Dyspnea	1.4±0.5	1.5±0.6	1.7±0.8	0.08
Nausea-vomiting	2.8±1.3	2.9±1.3	3.0±1.4	0.6
Loss of appetite	1.5±0.6	1.6±0.8	1.8±0.8	0.1
Sleep disorders	2.2±0.9	2.1±0.9	2.3±1.0	0.5
Pain	3.7±1.2	3.6±1.4	4.1±1.6	0.07
Fatigue	6.1±1.7	6.2±2.4	6.8±2.5	0.2
Constipation	1.6±0.8	1.5±0.8	1.8±0.9	0.3
Diarrhea	1.1±0.3	1.3±0.6	1.4±0.6	0.05
Financial difficulties	2.0±1.0	2.5±1.0	2.7±1.0	0.007

EORTC-QLQ: European Organization for Research and Treatment of Cancer quality of life questionnaire, SD: Standard deviation

Responses given to EORTC QLQ-C30 survey questions were evaluated based on the stages of the disease; generally, stage 1 patients had more favorable quality of life parameters relative to other patients in stage 2, and 3. As for subgroups of diarrhea (p<0.05), and financial

difficulties (p<0.001) a statistically significant difference was observed, while differences between other subgroups were not statistically significant (p>0.05) (Table 8). Assessments based on responses given to EORTC QLQ-BR23 questionnaire items demonstrated improve-

**Table 9. Comparison of breast cancer stages based on EORTC QLQ-BR23 scale scores**

EORTC QLQ-BR23	STAGE 1	STAGE 2	STAGE 3	P value
	n: 53	n: 128	n: 69	
	Mean± SD	Mean± SD	Mean± SD	
<b>FUNCTIONAL SCALES</b>				
Body image	9.5±3.6	9.8±3.6	10.8±3.9	0.1
Sexual life	2.7±1.0	3.3±1.3	3.0±1.1	0.04
Sexual pleasure	1.5±0.7	1.6±0.7	1.5±0.7	0.5
Future perspectives	2.3±1.1	2.5±1.0	3.0±1.1	0.008
<b>SYMPTOM SCALES</b>				
Adverse effects	13.8±3.8	13.2±4.0	14.6±4.8	0.07
Breast symptoms	6.9±1.9	6.6±2.5	6.8±2.5	0.7
Arm symptoms	5.9±1.8	5.6±2.0	6.0±2.1	0.4
Hair loss	2.51±.1	2.4±1.1	1.8±0.5	0.3

EORTC-QLQ: European Organization for Research and Treatment of Cancer quality of life questionnaire, SD: Standard deviation

ments in sexual life (p<0.04), future perspectives (p<0.008), and other parameters in stage 1, without any statistically significant difference between groups (p>0.05) (Table 9).

**Discussion and Conclusions**

Numerous studies performed during the last century revived different treatment alternatives in the management of breast cancer. However when selecting appropriate treatment modality, generally basic targets as survival rates are taken into consideration. However, when evaluating treatment responses the effects of the treatment on quality of life should be also considered. Taking the quality of life into account will aid in selecting more suitable treatment alternatives (9).

Scarce number of studies has investigated the impact of surgical treatments performed on quality of life, social, psychological, and sexual lives of patients with breast cancer (10). In these studies, usually effects of various surgical interventions have been stressed. Distinct from other studies, in our study stage of the disease, age groups, and type of the operation performed were also considered.

In our study, EORTC QLQ-C30, and EORTC QLQ-BR23 questionnaire forms were preferred because of availability of easily intelligible, internationally reliable, and validated Turkish version suitable for our study.

Our study included more participants than other studies in the medical literature (11-15). However their distribution among surgical alternatives are not homogenous (MRM:194, SM:29 and BCS:23) which presumably might influence statistical significance of our results.

Similar to literature findings, we noticed that also in our study mostly MRM, and at a lesser extent BCS had been performed (11, 12). Parallel with the literature, educational level of BCS patients was higher than the remaining patients (16).

Our patient population consisted of married (n=237; 94.8%), and divorced (n=9; 3.6 %) women. Seven of nine (78 %) women were divorced after they were diagnosed with breast cancer. In the literature,

the percentage of divorced women after diagnosis of breast cancer was higher than found in our study (9-17). We can explain this phenomenon by the more conservative and religious construction of Turkish family structure.

In our study, quality of life of the patients who had undergone breast surgery were evaluated by EORTC QLQ-C30 questionnaires, and in all scales (though in some scales the intergroup difference did not reach statistical significance) MRM group was found to be more adversely affected than the BCS group. In a study performed in our country by Zanalpalioglu et al. (18) scores of subgroups of well-being, functional state, and symptom control were significantly better in BCS patients in comparison with the MRM group. In a similar study performed by Dubashi et al (11) detected better general health state in the mastectomy group relative to the BPS group.

According to the assessments based on EORTC QLQ-C30 scores, emotional, and cognitive states were found to be improved in patients with BCS when compared with the MRM group in compliance with the literature findings. Omne-Poten et al (19) detected anxiety, and depression in 45, and 49 % of their MRM patients, while corresponding rates in BCS patients were 40, and 43%, respectively. However, Ganz et al (20) reported that there was no difference between MRM and BCS groups in terms of psychological parameters one year after the operation.

During evaluations based on responses given to EORTC QLQ-C30 questionnaire items, social status was found to be significantly improved among BCS patients compared with the MRM group. In the literature, numerous studies have many times demonstrated that prolonged and tedious breast cancer treatment effects professional and social life of the patients, and families leading to labor loss, social isolation, despair, feelings of burnout, and depression (21-23).

Symptom scales of EORTC QLQ-BR23 questionnaire such as arm edema, hair loss, and breast symptoms are all related to body image. In our study, perceived body image was affected at a lesser extent in the BCS group when compared with the MRM group. Besides, perceived body images of younger and advanced stage cancer patients were adversely effected. Pyszel et al (24) reported that physical, psychological, and social status disorders are more frequent in patients with arm edema, as well as pain, and fatigue.

When patients were evaluated by EORTC QLQ-C30 items according to age groups, it was identified that the middle age group (Group 2) was more adversely affected from breast cancer. Statistically significant differences were found as for subgroups of cognitive state, and financial difficulties. In the financial subgroup, younger (Group 1), and in the cognitive functioning subgroup middle-aged group (Group 2) were more adversely affected. However all parameters in the advanced middle-aged group (Group 3) were minimally effected. Any comparable evaluation was not encountered in the literature. Evaluations based on EORTC QLQ-BR23 responses could not reveal any difference among age groups.

When evaluations were based on patients' responses given to EORTC QLQ-C30 items, and stages of their disease, all parameters of stage 3 patients were more deeply deteriorated. This phenomenon can be explained by more invasive nature of the disease, choice of mastectomy, and radiotherapy, and relatively higher doses of chemotherapy received by the patients. Similar assessments were not encountered in the literature. When evaluations were based on responses given to EORTC

QLQ-BR23 items, any difference was not detected between disease stages.

In our study, we also questioned post-mastectomy alterations in sexual life. We observed postoperative changes in sexual life less frequently in the BCS group as compared to the MRM group, without any statistically significant intergroup differences. Waldmann et al. (16) also noted that sexual life of the mastectomy group was more unfavorably affected than the BCS group. Zapanalıođlu et al. (18) demonstrated that invasive surgical treatment modalities had a profound impact on psychosexual life of Turkish women. Burwell et al. (25) attributed post-mastectomy sexual problems to the deterioration of body image, and decrease sexual desire. Whelan et al. (23) stated that sexual life parameters of patients who had or had not received radiotherapy were similar after 2 years of follow-up period. However, Arora et al. (26) detected relatively lower levels of sexual satisfaction among patients on chemotherapy. Ganz et al. (20) reported higher rates of psychosexual disorders in amenorrheic patients because of chemotherapy.

Changes in sexual life did not differ between age groups. However, sexual lives of the patients with advanced stage (stage 3) disease were deteriorated more significantly. Comparable assessments were not encountered in the literature.

In conclusion; breast cancer is a multi-dimensional disease that induces important derangements in the physical, psychological, and social aspects of the individual's life, and it is one of the most traumatic events that might be experienced by a woman during her lifetime. The physicians should inform their patients in detail about treatment alternatives, and they should reach a mutual consensus. The physicians should also include partners of the patients in every kind of training, and counseling sessions. Every supportive and assistive approach aiming at higher quality of life of the patients will resolve future concerns, and result in favorable physical, psychological, and social outcomes.

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