

## Is early-stage breast cancer risk for marital-dissolution?

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### Abstract

**Objective:** The effect of breast cancer on family life and marital status is one of the issues to investigate. Our aim in this study is to evaluate the frequency of divorce of breast cancer survivors and to investigate the demographic, disease, and treatment-related factors that may affect the divorce.

**Material and Methods:** We performed this cross-sectional study between January 2020 and May 2020. Inclusion criteria were; women who were married at the time of breast cancer diagnosis, older than 18 years of age, and completed at least 6 months after breast cancer surgery and adjuvant chemotherapy/radiotherapy. The primary aim of this study was to find the marital dissolution rate of the patients after early-stage breast cancer diagnosis and adjuvant treatment. The secondary aim was to investigate the demographics and treatment-related factors affecting the marital status of breast cancer survivors.

**Results:** The median age of 583 women included in the study was 47 (28-72). The median time to stay married was 291.0 months (min-max: 32.5-654.6). The most preferred surgical method in these patients was total mastectomy (n = 364, 62.4%). Adjuvant chemotherapy was applied to 505 (86.6%) patients, adjuvant endocrine therapy to 499 (85.6%) patients, and adjuvant radiotherapy to 460 (78.9%) patients. 21 (3.6%) patients divorced after diagnosis. In univariate analysis, surgery type, adjuvant chemotherapy, adjuvant radiotherapy, and adjuvant endocrine therapy were found to not affect the divorce.

**Conclusion:** In our study, it was observed that the frequency of divorce was higher in breast cancer survivors than the general population, and breast surgery type and adjuvant treatments did not cause an increase in the risk of divorce.

**Keywords:** Marital dissolution, breast cancer, divorce, chemotherapy

### Introduction

Breast cancer is the most common cancer in women. It is in fourth place in cancer-related deaths (1). Adjuvant treatments applied in early-stage breast cancer led to a reduction in breast cancer-related mortality (2, 3). 25% of cancer survivors among women in the USA are breast cancer survivors (4).

Successes in breast cancer treatment ensure that these patients survive longer (2, 3). The diagnosis and treatment process of breast cancer affects breast cancer survivors both physically and psychosocially (5). Some of the difficulties that breast cancer survivors facing in their daily lives are continuing working life, restrictions in social life, difficulties in childcare, and problems with their spouses (6-16).

The effect of breast cancer on family life and marital status is one of the issues to investigate. Is the promise of 'in sickness and in illness' working for breast cancer survivors?

Our aim in this study is to evaluate the frequency of divorce of breast cancer survivors and to investigate the demographic, disease, and treatment-related factors that may affect the divorce.

### Materials and Methods

#### Study design and setting

We performed this cross-sectional study between January 2020 and May 2020 at the University of Health Sciences, Ankara Oncology Research and Training Hospital, Department of Medical Oncology. We obtained local ethical committee approval before the study.

Our hospital is a tertiary-care comprehensive oncology center that admits an average of 400 solid malignancy patients per day to the medical oncology outpatient clinics. Approximately one-third of these patients are cancer survivors.



All patients diagnosed with breast cancer who applied to our out-patient clinic between January 2020 and May 2020 were evaluated for eligibility for the study. Inclusion criteria were; women who were married at the time of breast cancer diagnosis, older than 18 years of age and completed at least 6 months after breast cancer surgery and adjuvant chemotherapy/radiotherapy. Patients in the metastatic stage, those who continued chemotherapy or radiotherapy were excluded. Patients who received adjuvant endocrine therapy were included in the study.

Eligible patients were informed in detail about the study. Informed consent forms were given to those wishing to participate in the study, and sufficient time was given to read. A questionnaire was conducted with face-to-face interviews in a separate room by the oncologist and the patients who approved to participate in the study. The medical records of the patients regarding breast cancer were accessed through the manual files and electronic medical record system. Age, education, employment status, marital status, parental status before and after the breast cancer diagnosis and the stage of cancer, type of breast cancer surgery, adjuvant chemotherapy, radiotherapy, and endocrine therapy were recorded.

The primary aim of this study was to find the marital dissolution rate of the patients after early-stage breast cancer diagnosis and adjuvant treatment. The secondary aim was to investigate the demographics and treatment-related factors affecting the marital status of breast cancer survivors.

### Statistical analysis

The data were evaluated by the IBM Statistical Package for Social Sciences (SPSS®) v.21 (IBM Inc.; Armonk, NY, USA).

Married time is defined as the duration from the date of marriage to the date of interview or divorce. Follow-up time is defined as the duration from breast cancer diagnosis to the date of the interview.

The association between categorical variables and divorce was evaluated by univariate analysis. The Odds Ratios (ORs) with 95% confidence intervals (CIs) were calculated for comparing marital dissolution risk.  $p < 0.05$  was considered as statistically significant level.

### Results

2912 women with breast cancer who applied to the outpatient clinic were evaluated for eligibility for the study. Of the 782 patients who met the inclusion criteria, 702 accepted to be included in the study. Of the patients who completed the face-to-face questionnaire, 583 patients who were married during breast cancer diagnosis were analyzed.

The median age of 583 women included in the study was 47 (28-72). 353 (60.5%) of these patients were primary school graduates and 370 (63.5%) were not working. 469 (80.4%) patients lived in the city center. Mean time to stay married was 291.0 months (min-max: 32.5-654.6). 540 (92.6%) of the patients had at least one child. Patient characteristics are shown in Table 1.

**Table 1.** Patient characteristics

	n: 583	%
<b>Age (years)</b>		
Median (range)	47 (28-72)	
<b>Place of residence</b>		
City center	469	80.4
District	87	14.9
Village	27	4.6
<b>Education level</b>		
Illiterate	3	0.5
Primary	353	60.5
Secondary	117	20.1
Higher	110	18.9
<b>Smoking status</b>		
Smoker	69	11.8
Non-smoker	514	88.2
<b>Stage of breast cancer</b>		
I	102	17.5
II	290	49.7
III	191	32.7
<b>Type of surgery</b>		
Lumpectomy	210	36.0
Mastectomy	373	63.9
<b>Adjuvant treatment</b>		
Chemotherapy	505	86.6
Radiotherapy	460	78.9
Endocrine therapy	499	85.6

**Table 2.** Univariate analysis of the patients' characteristics for marital dissolution risk

Characteristics	OR (95% CI)	P
Age (years)	0.93 (0.92-1.05)	0.425
<b>Education level</b>		
Primary education	Ref	
Secondary education	0.61 (0.31-1.35)	0.198
Higher education	0.65 (0.14-0.49)	0.211
<b>Working status</b>		
Unemployed	Ref	
Employee	0.96 (0.46-1.91)	0.651
Having children	1.16 (0.61-2.11)	0.672
<b>Surgical method</b>		
Total mastectomy	Ref	
Breast-conserving surgery	0.68 (0.45-0.86)	0.22
Adjuvant chemotherapy	0.89 (0.68-1.42)	0.511
Adjuvant radiotherapy	0.86 (0.65-1.39)	0.482
Adjuvant hormone therapy	0.85 (0.66-1.25)	0.475

The median follow-up time of the group was 41.6 (11.7-251.8) months. The most preferred surgical method in these patients was total mastectomy (n = 364, 62.4%). Adjuvant chemotherapy was applied to 505 (86.6%) patients, adjuvant endocrine therapy to 499 (85.6%) patients, and adjuvant radiotherapy to 460 (78.9%) patients.

Of the 583 patients who were married before breast cancer diagnosis, 21 (3.6%) of them divorced after diagnosis. While 18 (85.7%) of divorced patients thought that breast

cancer caused the divorce, 12 of them (57.1%) stated that they wanted to divorce.

In univariate analysis, surgery type, adjuvant chemotherapy, adjuvant radiotherapy and adjuvant endocrine therapy were found to not affect the divorce. It was observed that age, having children, educational status, and working status did not have any relation with divorce, either (Table 2).

## Discussion

Aim of this study was to evaluate the divorce rates in breast cancer survivors and to evaluate the factors that may have an impact on divorce. As a result of our study, it has been observed that surgical methods and adjuvant treatments applied for breast cancer treatment do not increase the risk of divorce.

Studies investigating the relationship between cancer diagnosis and divorce generally consisted of heterogeneous patient groups, which include all types of cancer. In the population-based study conducted in the Danish population, no difference was found between the survivors other than cervical cancer and the general population in terms of divorce risk (17). Similarly, in another study conducted on approximately 1.5 million people in Norway, it was observed that cancer types other than testicular and cervical cancer did not affect the divorce (18). Unlike these studies, it has been reported that the risk of divorce is 25% higher in women with breast cancer in Sweden (19). Unlike the other two (17, 18) studies, in this registered-based study, data on variables that may affect divorces such as having children and comorbidity are missing (19).

While in the studies we have mentioned so far, all cancer groups have been included, the first study to investigate the frequency of divorce only in patients with breast cancer is the study of Dorval et al. In this study, the frequency of divorce was compared with the general population in patients with nonmetastatic breast cancer, and no difference was observed in the frequency of divorce (20). In a Finland study concluded in 2015, the risk of divorce for only early-stage breast cancer patients was investigated. In this prospective study of approximately 135,000 volunteer women, it was found that the diagnosis of early-stage breast cancer does not pose a risk for divorce (7).

According to the latest data of Turkey Statistics Institution, the crude divorce rate is 0.159% (21). This ratio was 3.6% in our study population of breast cancer survivors. Although the indirect comparison is not correct, the divorce rate in breast cancer survivors seemed higher than the general population. While none of the studies mentioned earlier, other than the Swedish records, there was no increase in the risk of divorce in breast cancer survivors, our study showed a higher divorce rate than the general population. The fact that our study is single-centered and does not represent patients living in all regions of our country may have caused this difference. Also, due to cultural differences, psychosocial changes caused by breast cancer may be different from other countries.

Six different types of cancer survivors were included in a large cross-sectional study in the US. As a result of this

study, it was observed that unemployment (or not working) and low-income levels increase the risk of divorce in female cancer survivors (22). Neither type of breast surgery nor adjuvant treatments were associated with marital dissolution in the Finnish population (7). In our study, neither patient characteristics nor surgical or adjuvant treatment modalities were directly related to the risk of divorce.

One of the limitations of our study was its cross-sectional and single-centered design. Therefore, we cannot generalize our results to all breast cancer survivors. Another limitation was that we did not have data on variables such as depression and quality of life, which are thought to have an impact on divorce.

## Conclusion

In our study, it was observed that the frequency of divorce was higher in breast cancer survivors than the general population, and breast surgery type and adjuvant treatments did not cause an increase in the risk of divorce.

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