

Depression and anxiety levels in woman under follow-up for breast cancer: relationship to coping with cancer and quality of life

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Abstract *Aim* The relation of anxiety and depression levels with characteristics of coping with the disease and quality of life were evaluated in women under follow-up for breast cancer. *Materials and Methods* Patients who had presented to the breast cancer polyclinics for follow-up were evaluated. The Beck Depression and the State-Trait Anxiety inventories were used in the evaluation of depression and anxiety levels. In order to evaluate their power to cope with cancer, the patients were questioned for a social support network. EORTC QLQ-C30 and QLQ-BR23 questionnaires were applied for quality of life evaluations. *Results* There were 23 (19%) patients with depression; 3 (2.5%) with grade I anxiety, 94 (77%) grade II, and 23 (19%) grade III anxiety, respectively. Depression and anxiety levels were affected by the following parameters: being unaccompanied by spouse for hospital follow-ups ($P < 0.0001$); request to get help by a psychologist ($P = 0.02$); presence of a person to share their problems ($P < 0.0001$); and using an alternative treatment ($P = 0.04$). In the quality of life evaluations, difficulty in sleeping, emotional status, fatigue, and body appearance were related with both depression and anxiety ($P < 0.05$ for all), whereas physical function ($P = 0.002$), role performance ($P = 0.005$), cognitive condition ($P < 0.0001$),

social position ($P < 0.0001$), pain ($P < 0.0001$), general health ($P < 0.0001$), treatment methods ($P = 0.001$), future anxiety ($P < 0.0001$), and arm symptoms ($P = 0.001$) were negatively affected in patients with depression. *Conclusion* High depression and anxiety levels in patients under follow-up for breast cancer influence the coping with cancer and quality of life adversely.

Keywords Breast cancer · Depression · Anxiety · Quality of life · Coping with breast cancer

Introduction

Breast cancer is one of the most common cancers encountered throughout the world, as well as the most frequently cancer affects the psychological condition of the women [1–3]. Besides the worries related with prognosis and survival, impaired body image and breast loss have negative effects on the patients. Although the process of adapting to the disease differs among patients, this condition may reach certain degrees of depression and anxiety requiring psychotherapy and medical treatment [4, 5].

In breast cancer patients, the strength of coping with the problems caused by the disease is related to various variables. These may be evaluated by characteristics related to the patient (such as age, education, personal characteristics, career, marriage, and children), stage and treatment (stage of the cancer, prognosis, the degree of decrease in the quality of life), and environment (social support network, presence of an individual perceived as emotionally supportive, economic power to afford the treatments).

After completion of treatment, the fear of cancer recurrence emerges in patients. Symptoms caused by other reasons are perceived by these patients to be related with

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cancer, and these symptoms enhance the level of anxiety even further. Besides, the side effects of difficult treatments such as surgery, radiotherapy, and chemotherapy contribute to the development of anxiety and depression by affecting the patients' quality of life.

In the present study, 120 breast cancer patients, who had completed the whole treatments (surgery, chemotherapy, and radiotherapy) and had been followed up as disease-free (without local-regional and distant recurrence) for at least 12 months, underwent investigation for depression and anxiety scores, as well as characteristics in coping with breast cancer and the quality of life.

Materials and methods

One hundred and twenty breast cancer patients that had completed their radiotherapies at the Dokuz Eylül University Medical Faculty, Department of Radiation Oncology, at least 12 months ago and who had presented to the breast polyclinic for follow-up at a certain time interval were included in the study. All patients were disease free at their last follow-up on the basis of their physical examinations and mammograms as well as on the basis of other radiological images the patients underwent for other reasons.

The Beck Depression Inventory (BDI) was used to assess the depression levels [6], and the State-Trait Anxiety Inventory (STAI) was used to assess the anxiety levels of patients [7]. In addition to a questionnaire investigating the characteristics of the patients and the surroundings, another questionnaire was utilized to assess social support network and sharing of the affective domain for the problems caused by the disease and the degree of coping, and the EORTC (European Organization for Research and Treatment of Cancer) Quality of Life Questionnaires (QLQ) C30 and BR23 were applied to assess the quality of life.

Patients found to be suitable to be included in the study were informed about the study and their consents were obtained when they agreed to participate. Then, the questionnaires were applied in an environment where they would not be disturbed, would feel comfortable, and with one of the investigators accompanying (SS) them.

The BDI measures the bodily, emotional, cognitive, and motivational symptoms seen in depression. The aim of the inventory is to objectively determine the level of depression signs. In each of the 21 items, there were four options and each item corresponded to a score between 0 and 3. The sum of these scores produced the depression level. An elevated level of the total score showed the severity of depression. The validation, responsibility, and reliability studies of BDI were previously performed in our country by Tegin and Hisli [8, 9] and the cut-off point was reported as 17 for the Turkish population. However, standard cut-

offs were reported as follows by original publication: 0–9 indicates that a person is not depressed, 10–18 indicates mild-moderate depression, 19–29 indicates moderate-severe depression, and 30–63 indicates severe depression [6]. In our study, we evaluated the BDI scale using two cutoff scores of 9 and 17. Consequently, the patients were divided into three groups based on their BDI scores including below 9, between 9 and 17, above 17.

The STAI consists of 20 items of state and 20 items of trait anxiety scales. The sum of the scores obtained from both the two scales range between 20 and 80. A high score reflects a high level of anxiety or vice versa. In our study, patients with an anxiety score between 20 and 40 were assessed as grade 1, those between 40 and 60 as grade 2, and those between 60 and 80 as grade 3. A validation and reliability study of STAI in Turkish population was done by LeCompte and Öner [10].

A different questionnaire was applied to patients in order to assess the degree of coping with the problems caused by the disease. Here, the following were questioned to investigate the relation with depression and anxiety levels: the demographic characteristics, such as age, state of education, monthly income, marital status, number of children, as well as the time interval after completion of treatment, the level of information the patients had on the disease, the relaxing techniques they used (praying, drugs, comforting-relaxing techniques), presence of an individual to whom they felt close and could share their problems, the level of support provided by their spouses, children or friends, the level of their spouses' knowledge about the disease, whether the spouse accompanied the patient to crucial examinations (such as a routine follow-up appointment, investigation of a symptom, or a routine mammogram appointment), benefit from alternative treatment (including herbal remedies, vitamins, and minerals), and regular exercising.

In order to evaluate the quality of life of patients, EORTC core quality of life questionnaire (QLQ-C30) and breast cancer module (QLQ-BR-23) were used. Both modules are validated internationally; thus, broadly used in oncology patients with breast cancer [11, 12]. A sum of 53 questions in this questionnaire assessed the physical functions, role performance, emotional status, cognitive condition, social status, general wellness, symptom control, body image, sexual function, sexual satisfaction, future anxiety, and side effects related with the treatment. Cultural validity and reliability of the Turkish version of the EORTC QLQ C-30 has been established in Turkish patients [13, 14].

Statistical analysis

The data acquired by the study were analyzed by the SPSS v15.0 statistical program. For comparisons, the one-way

analysis of variance and the Pearson correlation tests were used together. In all the studies, a P value of under 0.05 was accepted as significant.

Results

The demographic characteristics of 120 patients included in the study have been displayed in Table 1. Median age of the patients was 52 years (range 31–82). Median follow-up time for breast cancer was 49 (range 12–168) months. Findings related to the evaluation of depression and anxiety have been displayed in Table 2. There was a rational correlation between the depression and anxiety levels of the patients ($P = 0.003$). However, no significant relation was observed between demographic characteristics and depression and anxiety levels. Among the patients, 10% were single, 75% were married, and 15% were divorced, while 1.5% was illiterate, 37% were primary school

graduates, 39% were high school graduates, and 22.5% were university graduates. Two and a half percent of the patients had no information about the stage and prognosis of the disease, 17.5% had little information, 40% stated that they had sufficient information, and 40% stated that they knew the disease in detail. No correlation was found between patients' knowledge about the stage and prognosis of the disease and depression and anxiety levels.

A significant correlation was found among the patients' ideas about their general health and depression levels ($P = 0.002$). The patients answered the question on their general health as: 5% of the patients said their health was excellent, 14% said it was very good, 62% said it was good, 15% said it was acceptable, and 4% said their health status was poor. Thirty-five percent of the patients said that they needed the help of a psychologist. In addition, the opinions about the general health of the patients who do not share their problems related to their illnesses were found to be more pessimistic ($P = 0.004$).

In questionnaire assessing the characteristics of coping, the following parameters were seen to have a negative impact on the level of depression: the spouse not accompanying the patient to follow-up examinations ($P < 0.0001$); request for help from a psychologist ($P = 0.02$); and use of alternative treatment ($P = 0.04$). Parameters affecting the level of anxiety were found to be: the spouse not accompanying to crucial controls and presence of an individual with whom the patients could share the problems related with the disease.

In tests assessing the quality of life, a significant relation was found between depression levels and physical function ($P = 0.002$), emotional status ($P < 0.0001$), role performance ($P = 0.005$), cognitive condition ($P < 0.0001$), social status ($P < 0.0001$), difficulty in sleeping ($P = 0.01$), fatigue ($P < 0.0001$), pain ($P < 0.0001$), general wellness ($P < 0.0001$), treatment methods ($P = 0.001$), body image ($P < 0.0001$), future anxiety ($P < 0.0001$), and arm symptoms ($P = 0.001$). No relation was found between sexual function and satisfaction, and the depression level. Parameters assessing the quality of life detected a significant relation between the level of anxiety and difficulty in sleeping ($P = 0.003$), emotional status ($P < 0.0001$), fatigue ($P = 0.006$), and body image ($P = 0.04$).

Table 1 Demographic characteristics of patients

	<i>n</i>	%
Age (median 52)		
>52	62	52
≤52	58	48
Educational status		
Illiterate	2	1.7
Primary school	44	36.7
High school	47	39.2
University	27	22.5
Marital status		
Single	13	10.8
Married	90	75
Divorced	17	14.2
Level of income		
Lower than expenditures	10	8.3
Equal to expenditures	87	72.5
More than expenditures	23	19.2

Table 2 Degrees of depression and anxiety in the patients

	<i>n</i>	%
Beck Depression Scale score distribution		
0–9	77	64.2
9–17	20	17.6
>17	23	19.2
Stait Trait Anxiety score distribution		
20–40	3	2.5
40–60	94	78.3
60–80	23	19.2

Discussion

Depression and anxiety are the most common psychological disorders observed in breast cancer patients and mostly related with fear of recurrence [15, 16]. In this study, patients under follow-up for breast cancer who had completed their treatment without local-regional or distant recurrences, underwent an investigation for the relation

between depression and anxiety levels, and coping with the disease and the quality of life.

Due to the differences on the cultural basis, the utilization of the depression and quality of life scales developed primarily in western culture can lead to different results in other cultures and societies. For instance, no relation was demonstrated between the parameters of demographic characteristics such as marital status, age, income, educational level, and depression and anxiety levels in patients with breast cancer in our study. However, it has been indicated that the socio demographic features such as age, marital status, income level, education status etc. may significantly affect the depression level in patients with breast cancer in western societies [17–20]. This situation can be related to the strong relationships which stand for the social support network like family, affinity and neighborhood in Muslim Turkish society and also to the material and spiritual support for the sick person in the society. In our study, while generally the support of their spouses in their daily lives and subjects out of the illness do not have an effect on the depression and anxiety levels of the patients with breast cancer, the parameter of the patient's spouse leaving the patient alone when she had fears of recurrence on the routine follow-up dates had a negative effect on both depression and anxiety levels. This situation may indicate that as Turkish women of whom mostly graduated from primary school and secondary school are more sensitive than the western women, they are hurt by considering that their illness do not receive enough attention from their spouses. In our study, there were totally 11 (9%) patients whose partner did not accompany to the hospital visits and 5 of them (4%) were not pleased about the marriage relationship with their partners. In a study conducted in Canada on patients with breast cancer, the ratio of the women who are not pleased about the relationship with their partners has been given at a rate (between 7.1 and 14.3%) which is more than the one in our study and it has been stated that these ratios shows similarity with the normal societies of them [21]. In a study performed in Israel, it has been stated that there have been changes in family relationships of 1/3 of spouses of patients with breast cancer due to the illness and that the communication of more than 1/3 with their spouses who have breast cancer has been decreased [22]. Nevertheless, it is important sources of support for the Turkish woman to share with her spouse her anxiety and fear. The willingness of the patient's spouse to share the difficulties related with cancer, accompanying the patient, and accepting the disease as a family problem, constitutes important support for the patients' point of view. The situation where the spouse does not support the patient in the process of coping with disease may be explained as supportive deficit in the marital relation, and lack of this crucial support negatively

affects the strength of coping with the disease in the other cultures as well [23–25].

Although the therapeutic benefit is unknown, use of complementary and alternative treatment is common among cancer patients [26–29]. In our study, the use of alternative medicine was reported in 43 patients (36%); *urtica urens* (dwarf nettle) was the most frequent form of alternative treatment, and this had a negative effect on the level of depression. In their study on 251 patients with breast cancer, Rakovithch et al. [28] found that the degree of fear of recurrence and cancer death was statistically higher in patients using alternative treatment. However, this condition has been reported to have no significant relation with depression and anxiety scores. Similar to our study, there are studies identifying high scores of depression and anxiety in patients using alternative treatment [29, 30]. In their study on 480 patients with early stage breast cancer, particularly in those having undergone surgery more than 3 months previously, Burstein et al. [29] found that the use of alternative treatment is an independent factor affecting the fears of cancer recurrence and depression.

Owing to the developments in cancer treatment, the chance of longer survival for the patients has increased. However, the patients wish to live with less functional loss and a higher quality of life. Therefore, problems regarding the quality of life have gained more importance on the international stage. To make a health-related quality of life scale for utilization international or cross-cultural, that scale is required to formulate the quality of life problems by an international expert group and to describe them by dimensioning on a common framework. While performing this, the specific characteristics special to that culture and nation are needed to be developed as much as possible by separating them for each culture or a nation [31]. Until now, although there are endeavors on performing cross-cultural quality of life evaluations, an international quality of life scale that includes these arrangements has not been constructed yet. The current available surveys have had the translation phase and most of them are still on the test stage for cross-cultural success and the results should be evaluated.

In our study, assessment of the quality of life was made using the Turkish version of EORTC QLQ-C30 and QLQ-BR23 questionnaires. In compliance with the results in other societies, a significant association was found between the level of depression and most of the parameters related with both function and symptom scales. Emotional status, difficulty in sleeping, fatigue, and body image scales have been demonstrated to have significant correlation with both anxiety and depression. Similar to our study, Mystakidou et al. [17] also demonstrated that emotional function has a significant association with both anxiety and depression. In

the studies of Shim et al. that have been conducted on German, Japanese, and South Korean patients with breast cancer, they have stated that depression was the most strong factor among the psychological factors affecting the quality of life. When cross-cultural analysis has been performed, it was found out that depression meaningfully decreases the quality of life of German and Japanese patients, none of the stress factors including depression, anxiety, and post-traumatic stress disorder have a negative effect on the quality of life in South Korean patients [32].

All the patients in our study received both chemotherapy and radiotherapy, and the QLQ-BR23 questionnaire determined a significant association between the module-evaluated arm symptoms and the depression level ($P = 0.001$). Berglund et al. [33] reported that the quality of life was lower in those patients received both chemotherapy and radiotherapy than in those who did not received radiotherapy. In the symptom evaluation in our study, it is thought that the correlation between arm symptoms and the level of depression related due to radiotherapy induced arm edema. Krishnan et al. [34] reported that depressive symptoms and fear from recurrence were more frequently experienced in breast cancer patients managed by breast conservation therapy and radiotherapy, who develop lymphedema.

There are a few studies searching the long-term adaptation process and quality of life in patients having disease-free breast cancer [35, 36]. In our study in which median follow-up period based on illness was 49 months, it has been determined that 23 (19%) of the patients were depressive and 23 of them were severely anxious. Especially depression had a negative impact on almost every domains of quality of life except sexuality. In the studies of Holzner et al. [35] that have been conducted on patients with breast cancer whose treatment was finished more than a year ago in Austria, it has been stated that there is decrease in the quality of life especially in emotional, social, and sexual functions even in the patient group of which treatment was finished more than 5 years ago.

In women with breast cancer, sexual problems may be connected to psychological and physiological (ovarian suppression/ablation) side effects caused by treatments such as surgery, radiotherapy, chemotherapy, and hormone therapy. Although the prevalence of sexual dysfunction is reported to be between 40% and 100%, it is hard to define a certain rate due to ethnic and cultural differences [37–43]. In our study, no significant correlation was observed between depression and quality of life scores related with sexual function and sexual satisfaction. This condition may be contributed to the nature of Turkish women to have fewer expectations on sexual life and their timid behavior when answering the questions in this module due to their cultural and social characteristics. When the patients were

grouped according to age, no significant relation was shown between sexual function and satisfaction and depression. However, health-related quality of life studies done in western societies on long-term breast cancer survivors demonstrated that sexual dysfunctions is the most important late complication of the adjuvant treatments [35, 36, 38, 39].

In routine clinical practice, it is not possible to reveal depression and anxiety disorders unless questioned, since investigations have been focused on breast cancer recurrences. Therefore, it would be useful to examine the psychological status of patients during routine follow-up examinations and questioning their need for professional help of a psychologist. This may prevent the findings of depression and anxiety and improve the patient's coping abilities with the disease and the quality of life.

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