

# Evaluation of symptoms of anxiety and depression in women with breast cancer after breast amputation or conservation treated with adjuvant chemotherapy

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## Abstract

**Objective.** Evaluation of the presence of symptoms of anxiety and depression in women treated for breast cancer who underwent surgical procedure using one of two alternative methods, either radical mastectomy or breast conserving treatment (BCT).

**Methods.** A questionnaire survey involved 85 patients treated in a conservative way and 94 patients after breast amputation. Hospital Anxiety and Depression Scale (HADS), Beck Depression Inventory (BDI) and depression degree evaluation questionnaire were used in the study. The patients' responses were statistically analyzed.

**Results.** Based on the HADS questionnaire, the total anxiety level in the group of women treated with BCT was 6.96 points, while in the group of patients who had undergone mastectomy the value was 7.8 points. The observed results were statistically significant.

In the case of depression, the following values were found: patients after amputation had 8.04 scale value points, and those after BCT had 6.8 scale value points. The observed differences were statistically significant. Negative correlation was found between the level of anxiety and depression. The total level of depression evaluated using the Beck scale was 16.3 points in the BCT group, which means that they suffered from mild depression, while in the mastectomy group the level was 19.6 points, which corresponds to moderate depression.

**Conclusions.** The level of anxiety and depression among women with breast cancer was influenced by the type of the applied surgical procedure and adjuvant chemotherapy.

Demographic variables did not influence the level of anxiety and depression.

## Key words

breast cancer, mastectomy, BCT, anxiety, depression, socio-demographic factors

## INTRODUCTION

In Poland, breast cancer is the most prevalent malignant neoplasm in women, constituting about 22.4% of all cases of malignancy [1].

Breast cancer treatment is a combined therapy, with the sequence and time of therapeutic activities established according to certain universal standards adopted and applied in Poland and worldwide. The basic rule for therapeutic process in the early stages of neoplastic progression is primary application of surgical procedure complemented with postsurgical radiotherapy (RTH), depending on the indications [2].

The main purpose of surgical treatment is ensuring oncological radicality, as well as obtaining data concerning pathological advancement of the neoplasm. Two types of surgical procedures are used in course of breast cancer

treatment: breast conserving treatment (BCT) and breast amputation (mastectomy) [3].

The methods of breast cancer treatment have a well established therapeutic value but surgical treatment, chemotherapy, radiotherapy and hormonal therapy are associated with the occurrence of adverse effects. Clinical symptoms of the side-effects may occur as transient, non-specific changes without any influence on the comfort of patient's life, or they can form characteristic syndromes significantly affecting the patient's daily activity and decreasing the quality of patient's life. Coping with neoplastic disease is often a prolonged process adversely affecting the patient's previous lifestyle and quality of life.

It is commonly believed that a neoplastic disease seals the patient's fate. Such a psychological burden results from the fact of the life-threatening situation, occurrence of pain, treatment, dependence on medications, being dependent on others, necessity of repeated hospitalizations, loss of control of one's life, and uncertainty concerning the nearest future. The patient is powerless and does not have any influence on the course of the disease. This lack of personal control may deepen the passive attitude towards the whole process of treatment [4].

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Patients diagnosed with breast cancer encounter many specific problems at all stages of diagnostics, therapy, rehabilitation, remission or progression. They concern their health status, as well as immediate and distant adverse effects of the applied oncological treatment.

Psychological problems, such as a persisting sense of threat to the patient's life with resulting anxiety, depression, cancerophobia, lack of self-acceptance, and a sense of threat to existential and spiritual needs, are as important as physical symptoms [5]. Domination and intensity of some of them, to a large degree, depend on the course of the disease, its progression and patient's individual features [6].

Neoplastic diseases are characterized by their dynamic course of progression which requires the patients to have the ability to deal with constantly changing situation. How the patients deal with the emotions associated with the disease depends, among others, on the information they have on the disease, its treatment and other patients' reaction to the disease [7]. Lack of reliable information concerning the disease or incorrect information based on stereotypes form inadequate emotional responses towards the disease and its treatment. Precise monitoring of the negative emotions, especially anxiety and depression, is an important element of healthcare because their intensification may interfere with appropriate course and efficiency of treatment [8].

## OBJECTIVES

The purpose of the study was evaluation of the intensity of anxiety and depression in women treated for breast cancer who had undergone either of the two methods of surgical procedure: radical mastectomy or breast conserving treatment (BCT), followed by systemic adjuvant treatment. The following research problems were posed:

1. Did the application of surgical procedure influence the level of anxiety and depression in women with breast cancer?
2. What was the influence of social and demographic factors on the intensity of anxiety and depression?
3. Did the application of adjuvant chemotherapy following surgical procedure influence the intensity of anxiety and depression?

The following research activities were conducted to fulfill the purpose of the study:

- analysis of data obtained using The Hospital Anxiety and Depression Scale (HADS);
- analysis of data obtained using the Beck Depression Inventory (BDI);
- analysis of data obtained using our own questionnaire attached to the main study;
- in-depth analysis of the elements distinguishing the two study groups concerning demographic data and the applied surgical procedure.

## MATERIALS AND METHOD

The questionnaire survey involved 85 patients treated by breast conserving treatment and 94 patients who had undergone mastectomy. All patients were treated in the Lublin Region Oncology Centre (COZL) and Clinic for Surgical Oncology at the Medical University in Lublin in the

years 2005–2007. The study was performed after obtaining a positive opinion from the Bioethical Committee at the Medical University in Lublin.

**Study group characteristics.** Mean age within the study group was  $\pm 53$  years. The youngest patient was aged 32 and the oldest 73. In both study subgroups, 116 patients lived in cities, 19 lived in small towns and 44 in rural areas. Altogether, 135 patients came from cities and towns. The largest number of patients, namely 85, had secondary education, 53 higher education and 41 had vocational education. The majority of women were married – 141 (78.8%). All study subjects (100%) had undergone surgical procedures (BCT, mastectomy) and received one course of adjuvant chemotherapy.

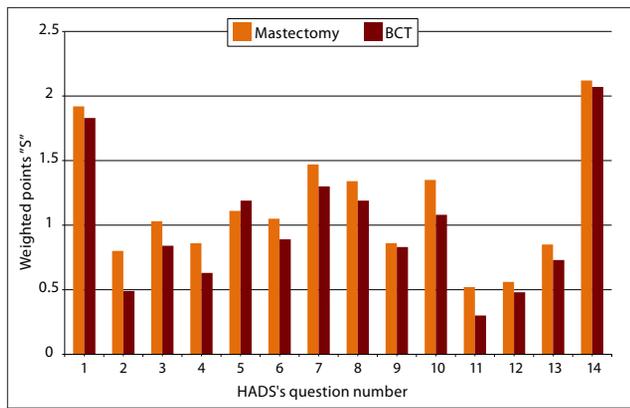
Hospital Anxiety and Depression Scale modified by Majkiewicz, de Walden-Gałuszko, Chojnacka-Szawłowska and Magiera was used in the study [9]. HADS is used for screening for anxiety and depression in patients undergoing oncological treatment [10]. The responses are evaluated using a four-point Likert-type scale – from 0–3. In both anxiety and depression subscales the results were summed-up. Values from 0–7 indicate normal levels, 8–10 are border values (slight anxiety disorders), and values from 11–21 are considered to be pathological (anxiety disorder) [11].

The Beck Self-evaluation Scale is a well known questionnaire used for evaluation of the presence and intensity of depression [12]. (The scale consists of 21 descriptions of groups of symptoms, and the patient has to choose the one that best describes the state in the indicated time period. The following criteria were adopted for measuring the intensity of depression: 0–4 no depression; 5–7 mild depression; 8–15 moderate depression; over 16 points severe depression. The level of depression has been calculated according to various standards (e.g. German standard, American standard). The Beck Self-evaluation Scale is not sufficient for diagnosing or excluding depressive disorders; the test may only be helpful in diagnostics and used for monitoring the efficiency of the applied treatment. The questionnaire was filled- in by the patients after the first course of adjuvant chemotherapy following surgical treatment.

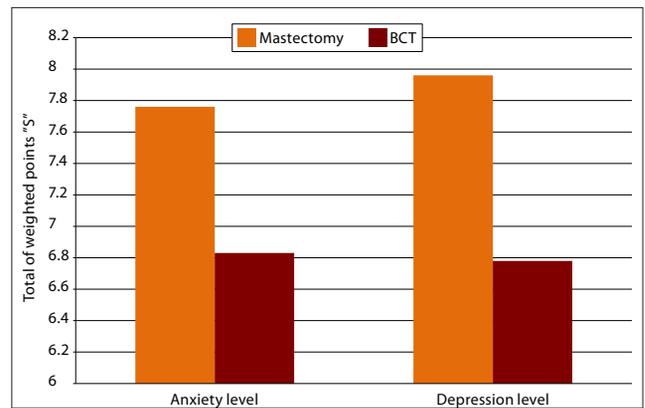
The description of the study group with respect to continuous variables (e.g. age) was conducted using the Descriptive Statistics module of Statistica StatSoft v. 7.1. software. The characterization of the study group was performed using basic demographic data. Depending on the distribution of the analyzed elements, they were described with either a median or average value, as well as a range of percentiles and standard deviation. In the case of differences between the two subgroups, Nonparametric Statistics module tests were used, U Mann-Whitney and Kolmogorov-Smirnov, respectively. In order to discover the differences in the preferences of the two subgroups McNemara  $\chi^2$  test was used. The calculations were performed for the confidence interval CI = 95%. Thus, the differences with statistical significance were those for which the p value met the condition of  $p < 0.05$ .

**Study results description.** Evaluation of degree of anxiety and depression.

Analysis of data obtained from the HADS questionnaire showed that the perceived level of anxiety and depression was higher among the patients who had undergone mastectomy, compared to the patients after BCT (Tab. 1).



**Figure 1.** Comparison of perceived level of anxiety and depression based on HADS questionnaire, broken down into respective questions in the groups of patients who had undergone surgical procedures, either mastectomy or BCT, followed by systemic adjuvant treatment



**Figure 2.** Comparison of perceived anxiety and depression on the basis of HADS questionnaire in the groups of patients who had undergone surgical procedures: mastectomy or BCT followed by systemic adjuvant treatment

**Table 1.** Results of studies using HADS questionnaire in the group of patients after mastectomy and the group of patients after BCT

Questionnaire Questions	Observed Reaction	Mastectomy (positive response percentage) n=94	BCT (positive response percentage) n=85	p
1	anxiety	65.7	54.6	**
2	depression	26.7	15.4	**
3	anxiety	34.3	26.2	**
4	depression	30.0	19.3	**
5	anxiety	41.3	36.5	
6	depression	36.6	28.0	**
7	anxiety	50.3	39.5	*
8	depression	45.0	34.7	
9	anxiety	29.0	25.6	
10	depression	43.7	32.8	**
11	anxiety	18.0	9.0	**
12	depression	19.7	15.4	*
13	anxiety	30.0	21.7	**
14	depression	70.3	62.4	

Significance of differences in the distribution of responses to questions according to HADS scale. \* – p<0.05; \*\* – p<0.01

The study subjects with high anxiety values were also characterized with higher intensity of depression. Analysis of the level of anxiety and depression in the subgroups of patients after either mastectomy or BCT showed higher level of anxiety and depression within all the criteria evaluated by the questionnaire. In the case of 10 out of 14 elementary criteria, the differences were statistically significant (Tab. 1).

Analysis of data presented in Figure 2 shows that the total level of anxiety in patients who had undergone mastectomy was 7.8 points, while patients after BCT the value was 6.96 points. In case of depression, the following values were observed: 8.04 in patients after mastectomy and 6.8 points in patients after BCT. U Mann-Whitney test confirmed that the noted differences were statistically significant, p< 0.01.

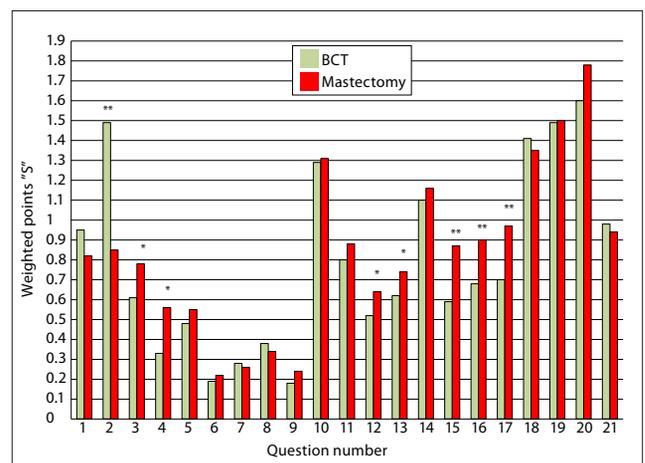
The survey conducted with the HADS questionnaire showed that 38.4% of patients after mastectomy and 30.4% patients after BCT suffered from anxiety. Symptoms of depression occurred in 38.9% of patients after mastectomy and 29.7% in the case of patients after BCT. Application of systemic adjuvant treatment following the above-mentioned

surgical procedures contributed to increased prevalence of anxiety and depression, reaching 64% of women after mastectomy and 52.4% of women after BCT.

A positive correlation was found between high level of anxiety and depression. It was also found that anxiety and depression depended on such factors as: having children, having a partner and the level of education. It was proved that anxiety and depression are intrinsically connected with breast cancer.

No statistically significant correlation was found between the intensity of depression and the level of anxiety, and the patients' age and health status (p>0.05). However, an obvious tendency was observed in the study group, older patients were more prone to depression.

No differences in the intensity of depression were observed between patients living in urban and rural areas. At the same time, it was found that study participants residing in rural areas were more likely to react to breast cancer diagnosis with stronger anxiety. The level of education did not influence the level of anxiety and depression in the study group (p>0.05). Single women were more prone to depression compared to those who were married (p>0.05).



**Figure 3.** Comparison of the level of depression and anxiety measured using Beck scale, broken down into respective questions in the subgroups of patients who had undergone either of the two surgical procedures, mastectomy or BCT followed by systemic adjuvant treatment. The significance of differences in the distribution of responses to questions \* – p<0.05; \*\* – p<0.01

## DISCUSSION

Despite great progress in the sphere of treatment methods, application of new radiotherapy techniques and introduction of new cytostatic medications, the prognosis for women diagnosed with breast cancer is not favourable. Thanks to modern treatment methods, many patients may reach long-term remission lasting months or even years, but there is also a group of patients who, due to the degree of disease progression, may only obtain periodical life quality improvement, symptoms relief and possibly life period extension [13].

The occurrence of psychological problems in women diagnosed with breast cancer is quite common. Among the unfavourable psychological consequences of breast cancer, the most important are fear, anger and sadness, but first and foremost anxiety and depression [14]. Precise assessment of the extent of the problem is difficult – it is estimated that it concerns 10–25% of patients with neoplastic disease [15]. Studies conducted among patients with breast cancer treated with adjuvant chemotherapy demonstrated the presence of clinical depression in about 37% [16].

The authors of the presented study analyzed whether social and demographic factors such as: age, education, marital status and place of residence influence evaluation of the intensity of anxiety and depression in women who had undergone either of the two methods of surgical procedure: mastectomy or BCT, followed by adjuvant chemotherapy. Education did not influence the level of anxiety and depression within the study group ( $p > 0.05$ ). In a study conducted by Khademi et al., a lower level of education was correlated with a higher frequency of symptoms of depression [17]. In own studies, statistically significant correlations were found between the intensity of depression and the patients' marital status. Single women were characterized with a higher intensity of depression, compared to those who were married ( $p > 0.05$ ). Similar conclusions were drawn by Nowicki et al. [18]. Depression occurred more frequently in single and childless women, the intensity of anxiety was also higher. Moreover, Karakoyun-Celik et al. [14] demonstrated that the absence of a spouse during follow-up hospital examinations had a negative influence on the patients' psychological condition, leading to higher intensity of anxiety and depression. It seems that the level of anxiety and depression in women is affected not only by their marital status, but also by the quality of their relationship and communication between partners [19]. Higher intensity of depression leads to family tensions, increased emotional excitability and a pessimistic vision of the future. On the other hand, disordered family relations and lack of support from their families are related to the states of depression and anxiety experienced by patients with breast cancer [20].

The results obtained in the presented study show that residents of rural areas experience more intense anxiety than residents of urban areas, which may be caused by less developed adaptational ability to cope with treatment conditions. Burris JL and Andrykowski M. [21] pointed out the disproportions in the psychological health of oncological patients from rural and urban areas. The differences are expressed by higher frequency of anxiety and occurrence of symptoms of depression symptoms, as well as more serious emotional problems experienced by residents of rural areas. The authors concluded that this population requires special

intervention and better access to mental health specialists. Similar conclusions were drawn by Weaver et al. [22] after conducting a questionnaire survey – patients diagnosed with neoplastic disease who resided in rural areas had worse outcomes in all aspects of their health, including more intense psychological distress in this group of patients.

Most studies and a systematic review of the literature indicate that patients who had undergone BCT are characterized with a lower level of anxiety and depression than patients after mastectomy [23]. In own studies, it was confirmed that a higher level of anxiety and depression occurred in patients who had undergone mastectomy. After breast amputation, apart from physical changes, the patients also experienced unfavourable psychological changes. They were characterized by the so-called 'half woman' complex [24], characterized by decreased self-esteem, lack of own body acceptance, anxiety about the loss of femininity, sexual attractiveness and relationship with the partner.

Studies of the level of anxiety and depression are measurable results of the conducted treatment and broadly defined patient nursing. A positive correlation was found between high level of anxiety and depression. Similar results were obtained by Juszczynski [25]. The helplessness-hopelessness syndrome and focus on anxiety are positively correlated with anxiety and depression.

Own studies confirmed that the level of anxiety and depression accompanying women after surgical procedure was not only a feature of their personality, but very often an unpleasant psychological condition connected with everyday struggle with the disease.

## CONCLUSIONS

4. The symptoms of anxiety and depression were dominant and more intense among women who had undergone mastectomy.
5. The study results revealed a correlation between the intensity of anxiety and depression in patients treated for breast cancer and socio-economic factors such as having children, marital status and the level of education.
6. Symptoms of depression occurred in 29.7% patients after BCT and 38.9% after mastectomy, while the prevalence of anxiety was 30.4% of women after BCT and 38.4% after mastectomy.
7. The obtained results indicate the high complexity of mutual relations between the disease itself, socio-economic factors, and the intensity of anxiety and depression.

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