

Evaluating Preoperative Anxiety Levels in Patients Undergoing Breast Cancer Surgery

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ABSTRACT

Objective: Patients' anxiety and stress levels are increased after the surgery. High levels of anxiety and stress could increase postoperative complications, as well as to prolong postoperative hospitalization and postoperative morbidity. This prospective, cross-sectional study was to evaluate the preoperative stress levels in patients undergoing breast cancer surgery. **Methods:** In the study participated 165 female patients who underwent breast cancer surgery, in a major oncological hospital in Greece. Demographic and clinical data were collected, and anxiety and stress levels assessed using the State-Trait Anxiety Inventory (STAI) Scale, which was a self-report questionnaire consisting of 40, 4 Likert Scale questions. The first 20 questions, STAI-X-1, were concerned to how the patient felt while answering the questionnaire (anxiety as a condition) and the remaining 20 questions, STAI-X-2, based on how the patient felt overall (stress as a personality trait). Descriptive statistics and nonparametric tests were performed at a significance level

alpha = 0.05. **Results:** In the present study, 165 females were enrolled who underwent breast cancer surgery. The mean age of the participants was 55.86 years, whereas the mean body mass index was 26.85. The 60.6% of patients underwent a lumpectomy and 28.5% had mastectomy. The 35.8% experienced moderate levels of anxiety, and the 17.6% experienced high levels. The two scales were positively correlated ($\rho = 0.643, P < 0.001$), at the significance level $P = 0.01$. Furthermore, the Stai-X-2 Scale was negatively correlated with body height ($\rho = -0.1188, P = 0.016$). **Conclusions:** The present study showed that patients' personality influenced their anxiety levels. Thus, the role of the nurse is a cornerstone in their psychological support preoperatively, to reduce the anxiety and stress levels.

Key words: Preoperative Stress and State-trait Anxiety Inventory Scale, preoperative stress, Stress Levels and State-Trait Anxiety Inventory Scale

Introduction

Patients, who undergo surgery, have increased anxiety and stress levels.^[1] In fact, the effects of this problem can be observed in all aspects of patient's hospitalization, with implications on his recovery after the surgery. This concern, though it may be expected, should be considered harmful

as the chances of increased postoperative complications, as well as prolonged postoperative hospitalization and morbidity are possible.^[1]

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During the preoperative phase, patients are exposed to various stressful situations and this can lead to higher stress levels, both intraoperatively and postoperatively. The impact can be large, with physical and mental consequences.^[2] Furthermore, the ability to return to daily activities and their quality of life after the surgery might be influenced.^[3] Higher preoperative stress levels have been associated with the high levels of postoperative pain, leading to increased need for analgesics.^[4] In general, higher levels of preoperative anxiety are an inhibitory factor in the postoperative recovery of the patient.^[5]

Many metaanalyses have shown that the prevalence of anxiety reaches 10% in oncological patients.^[6] Similarly, in 2013, these numbers were lower and reached the 7%.^[7] It is important to be mentioned that the majority of patients with high-depression levels express anxiety symptoms.^[8] While, 9% of patients with breast cancer appears to have high depression levels.^[9,10] Studies have explored the postoperative anxiety levels of patients with breast cancer or the anxiety levels of caregivers of these patients.^[11]

Breast cancer is the most common cancer among women, with psychological, occupational and social consequences.^[12] This prospective, cross-sectional study was to evaluate the preoperative stress levels in patients undergoing breast cancer surgery. Diagnosis and treatment, as well as the consequences on women's everyday life, are often severe. Nurses' ultimate goal is interventions to reduce anxiety levels, preoperatively, and promote postoperative recovery of patient.

Methods

The present study was a prospective, cross-sectional study. It was performed at a major Oncological Hospital in Greece July–September 2019. The research protocol was submitted for the approval to the Scientific Council of the hospital. Patients were signed the informed consent. In the study was participated patients (one arm) with breast cancer, treated with surgery. The questionnaire was filled in 1 day before the surgery.

Anxiety levels were assessed with State-Trait Anxiety Inventory (STAI) Scale.^[13] This is a self-report questionnaire consisting of 40 questions. The first 20 questions, STAI-X-1, referred to how the patient felt while answering the questionnaire (anxiety as a condition), whereas the remaining 20 questions, STAI-X-2, referred to how the patient felt overall (anxiety as a personality trait). The scale is a 4-point Likert scale. The scale has been validated in Greek by Liakos and Giannitsi^[14] and the Cronbach's a scale reliability and validity index are:

1. STAI-X1 scale $a = 0.938$
2. STAI-X2 scale $a = 0.8$ With Cronbach's values $a > 0.7$ to be considered satisfactory.

The demographic data were included age, family status, education level, and profession. As well, clinical data were collected, such as body mass index (BMI), body height, and body weight. Statistical analysis was performed using the SPSS version 22.0 Statistical Software package (IMSS SPSS software, Chicago, Illinois, USA). Significant level was $P < 0.05$. The variables were tested for their distribution and nonparametric tests were used rho (Mann–Whitney test, and Spearman rho), whereas parametric tests (t -test) were used if normal distribution was followed. The results are expressed as mean (Standard deviation). To avoid Type I error, Bonferroni correction was used for multiple comparisons according to the significant level $0.05/k$ (k = number of comparisons). The demographic data were analyzed as nominal variables, except the age that it was analyzed as scale variable.

Results

The final sample of the study consisted of 165 consecutive female patients who had undergone breast surgery. Patient demographic and clinical data are presented in Table 1. The mean age of the patients was 55.86 years, whereas the mean BMI was 26.85. Whereas, Table 2 presents patients' daily habits, preoperatively, and Table 3 shows the results of the STAI-X1 and STAI-X2 scale.

The two scales correlated positively with $\rho = 0.643$, $P < 0.001$, at significant level $P = 0.01$, as well both scales were positively correlated with age, meaning that older patients showed higher levels of anxiety, more specifically STAI-X1 $\rho = 0.153$, $P = 0.049$. Moreover, STAI-X2 $\rho = 0.319$, $P < 0.001$, respectively. The STAI-X2 scale was negatively correlated with body height, $\rho = -0.1188$, $P = 0.016$. Whereas, it was positively correlated with body weight and BMI, $\rho = 0.215$, $P = 0.006$ and $\rho = 0.2271$, $P < 0.001$, respectively.

The STAI-X2 scale was correlated with the number of times the patient was exercised, occupation, marital status, and education. Specifically, patients who did not exercise (16.97%) showed higher levels of anxiety ($P = 0.001$), whereas patients who were unemployed (23%) showed the moderate levels of anxiety ($P = 0.009$). At the same time, patients who were primary school graduates (17.58%) and secondary education graduates (19.39%) had moderate levels of anxiety ($P = 0.016$). Finally, patients who were married (27.27%) had the moderate levels of anxiety ($P = 0.022$).

Discussion

The present study observes and evaluates the preoperative levels of anxiety in patients undergoing breast cancer

Table 1: Patients' demographic and clinical data (n= 165)

Anthropometric data	Mean (SD)
Age (years)	55.86 (12.88)
Body weight (kg)	71.37 (12.69)
Body height (cm)	163.41 (5.89)
BMI (kg/m ²)	26.85 (5.36)
Demographic data	n (%)
Family status	
Single	27 (16.4)
Married	102 (61.8)
Divorced	19 (11.5)
Widow	17 (10.3)
Education level	
Preliminary	47 (28.5)
High school	67 (40.6)
University degree	51 (30.9)
Profession	
Unemployed	64 (38.8)
Free lancer	20 (12.1)
Private employee	53 (32.1)
Public employee	28 (17)
Smoking	
No	102 (61.8)
Yes	63 (38.2)
Heredity	
No	57 (34.5)
Yes	108 (65.5)
Kind of surgery	
Biopsy	4 (2.4)
Lumpectomy	100 (60.6)
Partial mastectomy	7 (4.2)
Mastectomy	47 (28.5)
Double mastectomy	1 (0.6)
Mastectomy + breast reconstruction	6 (3.6)

Table 2: Patients' daily habits (n= 165)

Daily habits	n (%)
How many times do you eat fast food, the week?	
Once	105 (63.6)
Twice	34 (20.6)
Three times	18 (10.9)
>3	8 (4.8)
How often do you go to the gym, the week?	
No	115 (69.7)
Little	39 (23.6)
A lot	11 (6.7)
Do you receive contraceptives?	
No	142 (86.1)
Yes	23 (13.9)

surgery. It was a prospective study with cross-sectional comparisons. It focuses on assessing the preoperative anxiety levels. The benefit of the present study remarks the use of more objective tools for better evaluation of preoperative stress levels. Anxiety assessment and the

immediate response by health professionals will help to reduce it.

Initially, the study showed that patients' personality influenced their anxiety levels. Patients with high preoperative anxiety levels also reported as personalities with high levels of anxiety. Data are consistent with international bibliography. A study by İzci *et al.* found that patients with breast cancer and those with extroversion personality features had lower levels of anxiety and depression, maintaining a better quality of life, whereas patients with higher scores on anxiety levels may have lower levels of anxiety and quality of life. Therefore, the psychological support of breast cancer patients during and after the treatment cannot be excluded ($P < 0.05$).^[15]

At the same time, the present study showed that older patients had higher levels of preoperative anxiety. However, a study by Hinz *et al.*, in cancer patients in Germany, showed that all patients, regardless of age and gender, had high levels of anxiety, whereas the anxiety levels were assessed using the Hospital Anxiety and Depression Scale.^[16]

Our study found that patients with high BMI and body weight exhibited the higher levels of preoperative anxiety. The findings are in contrast to an international study, which showed that patients had higher levels of anxiety when BMI was low because of eating disorders.^[17]

It is also important to note that socioeconomic factors influenced stress levels. Patients married and graduating from the primary and secondary education level reported higher levels of preoperative anxiety. Thus, data are in line with international studies. In the study of González-Mesa *et al.*, pregnant women who were unemployed with low educational background were found to have higher levels of anxiety.^[18]

Even though, there are not studies for patients undergoing breast surgery, whose preoperatively anxiety levels have evaluated and compared with demographic data, there are studies evaluating the stress levels of patients' spouses^[11] or perioperatively interventions with complementary care, such as music therapy to reduce patients' anxiety levels.^[19]

Conclusion

The present study showed that patients' personality related with their anxiety levels, whereas nurses' interventions are the cornerstone for their psychological support preoperatively, reducing stress and anxiety levels. Marital status and education caused moderate increased anxiety levels, whereas younger patients had decreased anxiety ones. This is important because physiological support, as well other treatments such as music and aroma therapy could help patients undergoing surgery for breast cancer to decrease their anxiety.

Table 3: State-Trait Anxiety Inventory-X1 and State-Trait Anxiety Inventory-X2 scores (n= 165)

STAI' s Total Score	n (%)
STAI-X1 scale	
Somewhat	77 (46.7)
Moderately so	59 (35.8)
Very much so	29 (17.6)
STAI-X2 scale	
Sometimes	85 (51.5)
Often	76 (46.1)
Almost always	4 (2.4)

STAI: State-Trait Anxiety Inventory

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Conflicts of interest

There are no conflicts of interest.

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