

RESEARCH ARTICLE

Anxiety and Pain in Surgically Treated Breast Cancer Patients

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Abstract

The aim of the study was to evaluate the level of anxiety and pain in women with breast cancer. Patients who had been treated with modified radical mastectomy or breast conserving surgery were included. Data were gathered using the state-trait anxiety inventory and the visual analog scale. The pain levels and analgesic consumption of the patients were evaluated after surgery. The study sample consisted of 150 women. The mean age of the participants was 50.54 ± 10.02 . Most of the patients (58%) received breast conserving surgery. The mean state anxiety score was 44.74 ± 11.91 , and the mean trait anxiety score was 48.78 ± 9.48 before surgery. The mean pain level on the first day following surgery was 3.26 ± 1.91 and analgesic consumption was 2.98 ± 1.08 . There was no correlation between patient pain and anxiety levels. There was very slightly positive correlation between trait anxiety and total analgesic consumption. Assessing the levels of anxiety in breast cancer patients before surgery may contribute to the determination of postoperative pain.

Keywords: Anxiety - breast cancer - pain

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Introduction

Breast cancer is the most commonly diagnosed type of cancer and the second leading cause of cancer related death among women (Vadivelu et al., 2008, Tuncer and Yucel, 2014, Yilmaz and Arslan, 2015). It comprises 23% of all female cancer around the world. (Ozmen, 2008). Incidence and mortality rates of breast cancer in developed countries are relatively higher; however, it has an increasing rate in developing countries such as Turkey (Ozmen et al., 2009). The incidence varies within different regions of Turkey according to geographical, economic, social, and cultural factors. In western regions (50/100,000) of Turkey, breast cancer is more than twice as common, compared to eastern regions (20/100,000) (Ozmen, 2008). Women who are diagnosed as breast cancer are exposed to multiple stressors (Reddick et al., 2005; Schou et al., 2008, Oztunc et al., 2013, Rizalar et al., 2014). First, women have to confront with the threat of breast cancer itself (Montgomery et al., 2003). On the other hand, breast cancer treatments may have a negative impact upon woman's emotional, physical, psychological, social and spiritual well-being (Reddick et al., 2005, Tuncer and Yucel 2014, Yilmaz and Arslan, 2015).

Anxiety is as an emotional reaction which is widely seen among woman with breast cancer (Stephens et al., 2008; Liao et al., 2010; Pedersen et al., 2010; Dastan and Buzlu, 2011, Tuncer and Yucel 2014). Anxiety evokes same responses on the physiologic system as pain (eg, increased heart rate, restlessness, cortisol secretion, catecholamine release), and preoperative anxiety contributes to the prediction of acute pain after surgery (Ozalp et al.,

2003; Katz et al., 2005; Vaughn et al., 2007). Pain is an unpleasant sensory and emotional experience (Ozalp et al., 2003). It can affect a patient's emotional, social, familial, occupational, and physical functioning (Vaughn et al., 2007). When anxiety is high, perception of pain also increases (Ozalp et al., 2003). Vaughn et al. (2007) found that pain intensity and total analgesic consumption were significantly related to preoperative anxiety. So, high pain levels lead to an increase in analgesic consumption after surgery (Cocelli et al., 2008). It has been reported that patients who had high levels of anxiety before the surgery developed more complications postoperatively and required a longer hospital stay (Cimilli, 2001).

Approximately 33% of patients treated for cancer, developed psychological morbidity (Pedersen et al., 2010). The incidence of anxiety before surgery is reported as 11%-80% among adults' patients by Caumo et al. (2001). High level of anxiety and distress prior to surgery leads to poor postoperative outcomes (Montgomery et al., 2003).

We aimed to evaluate the level of anxiety and postoperative pain in the women with breast cancer. The research questions were as follow; *i*) What is the level of anxiety in women with breast cancer before operation? *ii*) Is there a relationship between anxiety levels and postoperative pain?

Materials and Methods

Study design

The cross - sectional study has been conducted between January 1st and July 31st, 2010 in the breast surgery clinic of a university hospital located in Istanbul.

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Setting and sample

Breast cancer patients who have been treated with modified radical mastectomy (MRM) or breast conserving surgery (BCS) are included in the study. The hospital which is chosen for this study is one of the largest university hospitals in the region, which encompassed a range of patients from nearly all regions in Turkey. The participants completed a questionnaire regarding socio-demographic data, and the state-trait anxiety inventory before surgery. The pain levels of the patients are evaluated in the morning on the 1st and 2nd days following surgery. The patients are asked to fill a questionnaire which shows their level of pain on the visual pain scale. The number of oral and parenteral analgesic consumption by the patients is calculated on the day of discharge. All data were collected by the same nurse at day service via face-to-face interviews.

Participants

Women aged between 18 to 70 years, who are diagnosed with breast cancer for the first time, and also who did not have a communication problem, and did not have a chronic illnesses such as hypertension, diabetes mellitus, heart disease are included to this study. Patients who had metastasis are not included to the study sample. Among the participants, 21 patients did not agree to complete the questionnaires. The study sample consisted of 150 women. The general anesthesia is applied to all patients.

Data collection

Data are gathered using the 20-item questionnaire regarding personal (age, educational status, marital status, monthly income, smoking status, etc.) and disease-specific characteristics (information on their current condition, family history of breast cancer, etc.), the state-trait anxiety inventory (STAI), and the visual analog scale (VAS).

State- Trait Anxiety Inventory: Psychological distress is evaluated using the STAI. STAI has been developed by Spielberger in 1983 and was adapted to Turkish populations (Oner and Le Compte, 1983). The STAI is formed of two separate self-report scales in order to measure state and trait anxiety. Each scale consists of 20 items and respondents rate these statements as indicating how they feel in general (trait) and at one particular moment in time (state). Respondents rate the items on 4-point Likert type scales. Total scores for each scale range between 20 and 80. Higher scores indicate higher levels of anxiety. In our sample, Cronbach's alpha for the state anxiety was 0.79, the trait anxiety was 0.84.

Visual Analog Scale: The VAS was used to assess post-surgical pain level. The scale consists of a 0-10 centimeter line (0 indicates no pain and 10 indicates intense pain). The patient is asked to mark her pain intensity on this scale (Aslan, 2002).

Data analysis

The Statistical Package for Social Science (SPSS, 17 versions) is used for statistical analysis. Frequencies, means, standard deviations and percentage are calculated for all responses to questions in the survey. Categorical

variables are for independent samples compared by non-parametric test (Mann Whitney U and Kruskal Wallis). Pearson correlation analysis is calculated to assess the associations between level of anxiety and pain. The results were evaluated with a 95% confidence interval and p value less than 0.05 was considered statistically significant.

Ethical consideration

Permissions are obtained from the institution where the study is conducted and from the University's Ethical Board prior to the study. The purpose of the study is explained to each participant and patients who agreed to participate are included to the study.

Results

The mean age of the participants was 50.54±10.02. Socio-demographic and disease-specific characteristics of the patients are shown in Table 1. Most of the patients in our sample (58%) received breast conserving surgery. 82.7% were married, 88.7% had a child.

Before surgery; the mean state anxiety score was

Table 1. Participant Characteristics

Variables	(Mean ± SD*)	n	%
Age	50.54±10.02		
Marital status			
Married		124	82.7
Single		26	17.3
Education			
Literate		18	12.0
Primary School		94	62.7
Secondary School		24	16.0
High School		14	9.3
Locality			
Urban		116	77.3
Rural		34	22.7
Employment Status			
Employment		25	16.7
Unemployment		125	83.3
Income			
Low		118	78.8
Middle		27	18.0
High		5	3.3
Have a Child			
Yes		133	88.7
No		17	11.3
Smoking			
Smoker		29	19.3
Non-smoker		121	80.7
Treatment			
BCS		87	58.0
MRM		63	42.0
Knowing the Diagnosis			
Known		130	86.7
Unknown		20	13.3
Family History of Breast Cancer			
Yes		38	25.4
No		112	74.6
Degree of Relationship (n=38)			
Mother/Sister		19	12.7
Aunt		19	12.7

*SD: Standard Deviation

Table 2. Comparisons between Personal Characteristics and Anxiety Levels

Variables	State Anxiety		Trait Anxiety	
	Mean±SD	p	Mean ± SD	p
	44.74±11.91		48.78±9.48	
Marital Status				
Married	45.30±12.03		48.29±9.62	
Single	41.96±11.10	0.17	51.07±8.55	0.20
Education				
Literate	45.94±12.13		51.44±7.46	
Primary School	44.67±12.21		50.05±9.48	
Secondary School	44.70±12.51		46.95±9.27	
High School	44.76±9.29	0.96	39.92±9.48	0.001**
Employment Status				
Employment	45.04±8.40		43.40±8.11	
Unemployment	44.74±12.56	0.91	49.94±9.38	0.003*
Knowing the Daignosis				
Known	44.61±11.71		48.56±9.61	
Unknown	45.60±13.41	0.85	50.20±8.64	0.57
Family History of Breast Cancer				
Yes	48.00±11.08		46.55±8.46	
No	43.64±12.02	0.04*	49.53±9.72	0.13

*SD: Standart Deviation *p<0.05; **p<0.001

Table 3. The Relationship between Pain and Anxiety Levels

		State Anxiety	Trait Anxiety
First day pain level	r	0.88	0.79
	p	0.28	0.33
Second day pain level	r	0.10	0.11
	p	0.18	0.18
First day analgesic consumption	r	0.12	0.06
	p	0.12	0.45
Second day analgesic consumption	r	0.10	0.13
	p	0.22	0.10
Total analgesic consumption	r	0.03	0.16
	p	0.70	0.04*

*p<0.05

44.74±11.91, and the mean trait anxiety score was 48.78±9.48. The patients with a family history of breast cancer had higher state anxiety levels (48.00±11.08, p=0.04). The decrease in educational status led to an increase in the level of trait anxiety and that there is a negative correlation between educational status and trait anxiety (p=0.001). The trait anxiety levels of unemployed participants (49.94±9.38) is significantly higher (p=0.003) (Table 2).

The mean pain level on the first day following surgery is 3.26±1.91 and 2.83±2.10 on the second day. The mean number of analgesic consumption on the first day is 2.98±1.08 and second day is 1.67±0.88. There is no correlation between the patients' first or second day pain level and, anxiety levels. But there is very slightly a positive correlation between trait anxiety and total analgesic consumption (p=0.004). (Table 3).

Discussion

We aimed to evaluate the effects of anxiety levels on postoperative pain perception in women operated

for breast cancer. It has been found that high anxiety increases the usage of analgesic drug consumption. Cancer diagnosis and the treatment of cancer may have important psychosocial and physical side effects (Reddick et al., 2005, Tuncer and Yucel 2014, Rizalar et al., 2014). Anxiety is frequently seen in preoperative patients (Ozalp et al., 2003). It's the first reaction when encountering a threat and is also seen during illness (Erdem et al., 2011). In the study, women demonstrate moderate levels of anxiety. Negative future perception leads to anxiety in preoperative cancer patients (Cauma et al., 2001). Also cancer patients experience more anxiety compared to other disease groups (Ozalp et al., 2003). Caumo et al. (2001) underlined the importance of specific approaches which are aimed to reduce preoperative anxiety in cancer patients. It can be presumed that determining the level of anxiety in cancer patients and interventions for reducing the level of anxiety would positively affect the patients' adaptation to treatment and quality of life (Alacacioglu et al., 2007). Tuncer and Yucel (2014) determined that the women with breast cancer were felt medium level anxiety while receiving radiotherapy. Additionally, the trait anxiety levels of the women were seen higher than their state anxiety levels. Pre- and postoperative anxiety can be reduced if the health professionals have an understanding of the patient's reaction (Stephens et al., 2008). Interventions for reducing anxiety in this population would be beneficial considering the fact that preoperative anxiety contributes to higher levels of postoperative anxiety.

Anxiety levels may increase at women who have been associated with cancer (Tuncer and Yucel 2014). In the current study, patients who had a family history of breast cancer had higher levels of state anxiety. Tuncer and Yucel (2014) found no significant difference between mean score of trait and state anxiety level according to family history of breast cancer. Likewise, Dastan and Buzlu (2011) found that no relationship between with family history of breast cancer and anxiety. This finding

can be explained by the patients' negative or positive experiences regarding breast cancer. In addition, it has been found that a higher level of education is associated with lower anxiety levels. Previous study reported that women with primary school graduates had higher anxiety (Tuncer and Yucel 2014). This finding may be related with educated women, whom may have much information about breast cancer and its treatment. State anxiety contributes to trait anxiety and increased levels of anxiety result in elevated levels of pain (Cauma et al., 2001; Katz et al., 2005; Schnur et al., 2007). In the study, there is very slightly correlation between trait anxiety and total analgesic consumption. Vaughn et al. (2007) reviewed literature and they found a positive correlation between preoperative anxiety and postoperative pain. Schnur et al. (2007) have reported that patients who experience severe psychological distress prior to surgery are expected to have more postoperative pain. Similarly, Katz et al. (2005) have shown that preoperative anxiety contributes to acute pain following surgery. It can be assumed that preoperative anxiety leads to higher levels of postoperative anxiety and pain, resulting in high levels of analgesic consumption and probably longer hospital stays (Cauma et al., 2001). Ozalp et al. (2003) have found that breast cancer patients who had high levels of anxiety and depression prior to surgery reported higher levels of postoperative pain and needed more analgesics. The results of the study is similar other studies.

Acute postoperative pain is defined as the pain developing in a patient who has recently received a surgical intervention as a result of the surgical intervention, the patient's prior disease, or both (Erdem et al., 2011). In our study, the patients had more pain during the first day following surgery and that pain levels decreased on the second day following surgery. Surgical interventions frequently cause pain in the postoperative period (Vadivelu et al., 2008). Katz et al. (2005) have reported that intense pain in the postoperative period increases the risk of chronic pain. Aslan et al. (2011) recommended that the individual's pain management should be done with a holistic approach. Determining the level of pain after surgery and controlling postoperative pain may be helpful in controlling other complications which may develop later.

Breast cancer may cause physical and psychological effects on women. Women with low anxiety level experience less postoperative pain and less analgesic drug consumption. Exploring the levels of anxiety in breast cancer patients preoperatively may contribute to determination of postoperative complications as well as planning interventions and developing patient-specific care plans.

References

- Alacacioglu A, Yavuzsen T, Dirioz M et al (2007). Changes in anxiety levels patients with cancer receiving chemotherapy. *Int J Hematol Oncol*, **2**, 87-93.
- Dastan NB, Buzlu S (2011). Depression and anxiety levels in early stage Turkish breast cancer patients and related factors. *Asian Pac J Cancer Prev*, **12**, 137-141.
- Caumo W, Schmidt AP, Schneider CN et al (2001). Risk factors for preoperative anxiety in adults. *Acta Anaesthesiol Scand*, **45**, 298-307.
- Cimilli C (2001). Anxiety in surgery. *Klinik Psikiyatri*, **4**, 182-186.
- Cocelli LP, Bacaksız BD, Ovayolu N (2008). The nurse factor in pain therapy. *Gaziantep Tip Dergisi*, **14**, 53-58.
- Dastan NB, Buzlu S (2011). Depression and anxiety levels in early stage Turkish breast cancer patients and related factors. *Asian Pac J Cancer Prev*, **12**, 137-141.
- Aslan FE (2002). The assessment methods of pain. *Cumhuriyet Universitesi Hemsirelik Yuksekokulu Dergisi*, **6**, 9-16.
- Aslan FE, Kayis A, Inanir I et al (2011). Prevalence of cancer pain in outpatients registered to a cancer therapy center in Turkey. *Asian Pac J Cancer Prev*, **12**, 1373-5.
- Erdem D, Ugis C, Albayrak D et al (2011). The effects of anesthesia procedures in preoperative and postoperative anxiety and pain levels in perianal surgery patients. *Med J Bakirkoy*, **7**, 11-16.
- Katz J, Poleshuck EL, Andrus CH et al (2005). Risk factors for acute pain and its persistence following breast cancer surgery. *Pain*, **119**, 16-25.
- Liao MN, Chen PL, Chen MF et al (2010). Effect of supportive care on the anxiety of women with suspected breast cancer. *J Adv Nurs*, **66**, 49-59.
- Montgomery GH, David D, Goldfarb AB et al (2003). Sources of anticipatory distress among breast surgery patients. *J Behav Med*, **26**, 153-164.
- Oner N, Le Compte A (1983). Sureksiz durumluk/surekli kaygi envanteri el kitabı, 1. baskı, istanbul: bogazici universitesi yayinlari.
- Ozmen V (2008). Breast cancer in the world and Turkey. *J Breast Health*, **4**, 7-12.
- Ozmen V, Ozcinar B, Karanlik H et al (2009). Breast cancer risk factors in Turkish women-a University Hospital based nested case control study. *World J Surg Oncol*, **7**, 1-8.
- Ozalp G, Saroglu R, Tuncel G et al (2003). Preoperative emotional states in patients with breast cancer and postoperative pain. *Acta Anaesthesiol Scand*, **47**, 26-9.
- Oztunc G, Yesil P, Paydas S et al (2013). Social support and hopelessness in patients with breast cancer. *Asian Pac J Cancer Prev*, **14**, 571-8.
- Pedersen AE, Sawatzky JA, Hack TF (2010). The sequelae of anxiety in breast cancer: a human response to illness model. *Oncol Nurs Forum*, **37**, 469-475.
- Reddick BK, Nanda JP, Campbell L et al (2005). Examining the influence of coping with pain on depression, anxiety, and fatigue among women with breast cancer. *J Psychosoc Oncol*, **23**, 137- 57.
- Rizalar S, Ozbas A, Akyolcu N et al (2014). Effect of perceived social support on psychosocial adjustment of Turkish patients with breast cancer. *Asian Pac J Cancer Prev*, **15**, 3429-34.
- Schou I, Ekeberg O, Karesen R et al (2008). Psychosocial intervention as a component of routine breast cancer care- who participates and does it help. *Psychooncology*, **17**, 716-720.
- Schnur JB, Hallquist MN, Bovbjerg DH et al (2007). Predictors of expectancies for post-surgical pain and fatigue in breast cancer surgical patients. *Pers Individ Dif*, **42**, 419-29.
- Stephens PA, Osowski M, Fidale MS et al (2008). Identifying the educational needs and concerns of newly diagnosed patients with breast cancer after surgery. *Clin J Oncol Nurs*, **12**, 253-8.
- Tuncer G, Yucel SC (2014). Comfort and anxiety levels of women with early stage breast cancer who receive radiotherapy. *Asian Pac J Cancer Prev*, **15**, 2109-14.
- Vadivelu N, Schreck M, Lopez J et al (2008). Pain after mastectomy and breast reconstruction. *Am Surg*, **74**, 285-296.
- Vaughn F, Wichowski H, Bosworth G (2007). Does preoperative anxiety level predict postoperative pain. *AORN J*, **85**, 589-604.
- Yilmaz SG, Arslan S (2015). Effects of progressive relaxation exercises on anxiety and comfort of Turkish breast cancer patients receiving chemotherapy. *Asian Pac J Cancer Prev*, **16**, 217-220.