■Original Article

Comparison of posttraumatic growth, depression, anxiety and social support in breast cancer patients with and without posttraumatic stress disorder

Travma sonrası stres bozukluğu olan ve olmayan meme kanserli bireyler arasında, travma sonrası büyümenin, depresyonun, anksiyetenin ve sosyal desteğin karşılaştırılması

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ABSTRACT

Aim: The aim of this study is to compare the posttraumatic growth (PTG), depression, anxiety and social support in individuals with and without posttraumatic stress disorder (PTSS).

Material and Methods: 80 patients aged between 18 and 65, who presented to outpatient clinic of Medical Oncology Department, and who were diagnosed with breast cancer at least one year ago, were admitted to the study. These patients were assessed with the Impact of Event Scale (IES), Posttraumatic Growth Scale (PTGS), Perceived Social Support Scale (PSSS), Hospital Anxiety and Depression Scale (HADS) and Sociodemographic Data Collection Form.

Results: Pursuant to IES score, it was observed that 30 participants (37.5%) had PTSD related to breast operation. Posttraumatic growth scores of patients suffering from posttraumatic stress disorder was found to be significantly ($p < 0.001$) lower than patients without posttraumatic stress disorder. According to hierarchical regression analysis: posttraumatic growth scale scores explain 10% of IES scores in breast cancer patients without PTSD; however, posttraumatic growth scale scores in breast cancer patients with PTSD had no influence on explaining IES scores. In addition, in the event if PSS friend subscale and HADS anxiety subscale are included in IES scores of patients with PTSD, the explanatoriness was increased to 36%.

Conclusion: Increasing social support prior to PTG in breast cancer patients with PTGS and focusing on anxiety treatment in such patients may be more beneficial. In addition, primarily supporting PTG development in breast cancer patients without PTSD may help to reduce traumatic symptoms related to disease in such patients.

Keywords: Breast cancer; posttraumatic stress disorder; posttraumatic growth; social support; anxiety.

ÖZ

Amaç: Bu çalışmadaki amacımız TSSB'si olan ve TSSB'si olmayan bireyler arasında TSB, depresyon, anksiyete, sosyal desteği karşılaştırmaktır.

Gereç ve Yöntemler: Çalışmaya 18-65yaşlarında, Tıbbi Onkoloji Bilim Dalı polikliniğine ayaktan başvuran,en az bir yıl önce meme kanseri tanısı almış80 hasta dâhil edilmiştir. Bu hastalar Olay Etkisi Ölçeği (OEÖ), Travma Sonrası Büyüme Ölçeği(TSBÖ), Algılanan Sosyal Destek Ölçeği, Hastane Anksiyete ve Depresyon Ölçeği ve Sosyo-demografik Veri Formuile değerlendirilmiştir.

Bulgular: OEÖ puanına göre 30 (%37.5) katılımcıda geçirilen meme operasyonu ile ilişkili TSSB olduğu değerlendirildi. TSSB olan bireylerin TSBÖ skorlarının TSSB olmayan bireylerin skorlarından anılmalı derecede (p<0.001) düşük olduğu bulundu. Hiyerarşik regresyon analizine göre, TSSB'si olmayan meme kanserli bireylerde TSBÖ skorları, OEÖ ölçeği skorlarının %10'nunu açıklıyordu; fakat TSSB'si olan meme kanserli bireylerde TSB ölçeği skorları, OEÖ skorlarını açıklamada etkili değildi. Buna ek olarak TSSB'si olan bireylerin OEÖ skorlarını açıklamada hiyerarşik modele, ASD arkadaş alt ölçeği ve HADÖ-anksiyete alt ölçeği skorları eklendiğinde açıklayıcılık %36'ya çıkıyordu.

Sonuç: TSSB'si olan meme kanserli bireylerde TSB den önce sosyal desteği artırılmak ve bu bireylerde anksiyetenin tedavisine odaklanmak daha faydalı olabilir. Buna ek olarak TSSB'si olmayan meme kanserli bireylerde öncelikli olarak TSB gelişimini desteklemek, bu bireylerde hastalıkla ilişkili travmatik belirtilerin azaltılmasına aracılık edebilir.

Anahtar kelimeler: Meme kanseri; travma sonrası stres bozukluğu; travma sonrası büyüme; sosyal destek; anksiyete.

Introduction

Psychologic trauma is defined as the whole of emotional and cognitive responses of an individual in the face of events and situations such as war, rape, natural disaster and sudden onset of disease [1]. Cancer is a disease affecting physical and psychosocial functionality, and thus, affecting the general quality of life of a patient to a great extent; and therefore, leading to severe mental and social problems [2]. Being a disease threatening self esteem, sexuality and sense of femininity, breast cancer is a threat both for life and femininity of patient, during its diagnosis and treatment [3,4]. Due to its recurrence risk for patients after diagnosis, healthy selfhood loss, several difficult treatment types and treament processes, cancer is a difficult period including not only a single trauma, but several traumas. In 1994, DSM-IV was published, where life-threatening disorders such as cancer thay may lead to posttraumatic stress disorder (PTSD) are accepted as traumatic events [5].

In meta-analysis studies performed to determine risk factors for PTSD, risk factors were determined to include gender (femininity), younger age, low socio-economical status, minority status, psychiatric story, childhood abuse, previous other trauma, other adverse childhood, familial psychiatric story, trauma severity, absence of social support and life stress [6-9].

Noting individuals, who see the trauma as a new starting point and develop, instead of experiencing a psychological break-down after the trauma, lead Tedeschi and Calhoun (1996) to suggest "Posttraumatic growth" concept [10]. This concept was brought about to define beneficial changes, which may also have behavioural results in emotional and cognitive life. Posttraumatic growth means that a postitive change is observed for opinion for oneself, interpersonal relations and idea of life, after a trauma or a grave life crisis [11,12].

A positive correlation is reported between the symptoms of Posttraumatic stress disorders presenting in relation to a traumatic event and the PTG [13-15]. Moreover, there are also studies showing that traumatic symptoms have negative influence on posttraumatic growth [16,17]. Recurrent ruminative thoughts developed in the sequel of a traumatic event may lead to change in constructive processing. This process works as a driving force for change in the existential and philosophical fields regarding one's life [10,12]. In one respect, Posttraumatic growth is a mechanism developed for competing stress [18]. Furthermore, not having coherent information regarding correlation between the symptoms of posttraumatic stress disorder and PTG in breast cancer patients gave rise to discussions in this regard [19-21]. In a study conducted by Corodova et al. (2007) on 65 breast cancer patients, it was found that the PTSD symptoms related to cancer do not cohere with PTG. In their study, Widows et al. (2005) showed that there exists no significant relation between PTG and PTSD. In a meta-analysis, where 42 studies on this topic are assessed, it was observed that a significant correla-

tion exists between PTSD and PTG, and that this correlation may vary upon trauma type and age of individuals [15]. Moreover, it was proven to be a correlation between PTG and young age, higher education level, high income level, employed, religious, ethnicity, severe disease, social support personality, coping strategies, marital and family relations [19,22-26].

When a cross-sectional assessment is performed for cancer patients, it was seen that the incidence rate for posttraumatic stress disoder diagnosis among them varies between 4.5% and 11.7% [27]. In studies performed for posttraumatic stress disorder diagnosis related to breast cancer, the prevelance rates may range between 19% and 22% [28,29]. When we take into consideration that traumatic processes experienced in relation to cancer in cancer patients may influence PTG; comparing PTG in breast cancer patients with or without posttraumatic stress disorder would improve our knowledge on this field. Therefore, the aim of this study is to compare the posttraumatic growth, depression, anxiety and social security in individuals with and without posttraumatic stress disorder. Another aim is to determine to what extend posttraumatic growth may explain traumatic symptoms related to disease in breast cancer patients with or without posttraumatic stress disorder.

Material and Methods

Participants

Breast cancer patients, who presented to the oncology outpatient clinic in internal diseases department of a university hospital, are admitted to the study. The participants of study were 95 women aged between 18 and 65, who were diagnosed with breast cancer at least one year ago, and underwent surgery for treatment. For diagnosis of posttraumatic stress syndrome, at least 6 months should pass over the traumatic event experienced. Furthermore, for evaluation, at least 12 months should pass over a traumatic event in order for the positive effect of event to become stabile [30]. Therefore, patients who are in remission and who were diagnosed with breast cancer at least a year ago were invited to the study. Patients, who are receiving active chemotherapy or scheduled for surgery, were not included into the study.

Procedure

Participants of the study were selected among individuals willing to participate to study. A informed consent for participation was taken from all participants of the study, and the study was conducted pursuant to the Declaration of Helsinki. The ethics committee of the university approved the study. At least primary school graduates were admitted to the study. Those patients, who have another systemic/neurologic disease (cerebrovascular event, dementia, epilepsy, parkinson's disease, brain injury loss of consciousness) that may prevent the

patient to satisfy the scales, or may affect cognitive functions were excluded from the study. In addition, patients suffering from schizophrenia, schizoaffective disorder, psychotic disorder, mood disorders that are not in remission, or alcohol-drug abuse were not admitted to the study. Furthermore, patients that were thought to experience posttraumatic stress disorder symptoms due to another reason (violence, accident, mourning, infidelity, break up, etc.) were not admitted to the study. Therefore, prior to psychometric assessment, 6 uneducated patients, 1 Parkinson's disease patient, 2 patients diagnosed with mood disorders, and 1 patient, who was deserted by her husband were not admitted to the study. The data of 5 patients, who were assessed to be incomplete or incorrect after psychometric assessment were not included in the study. As a result, 80 patients meeting the inclusion criteria, and who have fully completed measurements were included into the study.

Psychometric assessment

Sociodemographic Data Form: This form included information regarding age, gender, marital status, educational level, employment status, accompanying chronic disease, cancer diagnosis and stage, chemotherapy and radiotherapy received during the cancer treatment process. These information, which were obtained during interviews with the patients, or from medical reports, were evaluated by a clinician.

Posttraumatic Growth Inventory: The posttraumatic growth experienced by patients with breast cancer was evaluated using the Posttraumatic Growth Inventory (PTGI), which is a scale developed by Tedeschi and Calhoun (1996) to measure the positive changes that developed and associated with the traumatic event [10]. This scale is a 6-point Likert type scale, ranging from 0= I have not experienced this change because of my life crisis, to 5= I have experienced this change very much because of my life crisis. The PTGI was adapted to Turkish by Kilic [31]. Dirik (2006), and three factors explaining 59% of variance were reported [32]. These factors are defined as 'changes in interpersonal relations', 'changes in idea of life', and 'changes in opinion for oneself'. The reliability coefficient of the scale was found to be 0.94. In this study we used this three dimensional version with the total score as a measurement of posttraumatic growth.

Impact of Event Scale: The Impact of Event Scale (IES) was developed by Weiss and Marmar (1997) according to the measurements of posttraumatic stress disorder prepared by the American Psychiatry Association [33]. There are five-point Likert 22 items on the scale to define the severity of impact in the previous 7 days. The IES is composed of 3 subscales as Intrusion, Avoidance, and Hyperarousal (36). Reliability and validity studies for the scale in Turkey were conducted by Corapcioglu

et al (2006) [34]. The scale was determined to have high sensitivity and specificity among 24 points (sensitivity 92.2% and specificity 70.7%).

Perceived Social Support Scale: The Perceived Social Support Scale (PSSS), which was developed in Turkey to determine the level of social support received from an individual's immediate family, relatives, friends, teachers, and from the institutions and organisations of the community in which they are living. It comprises 26 statements in three subscales, and is a three-point Likert scale. The subscales are 'family support', 'special one support' and 'friend support'. (Yildirim, 1997) Thus, the scores may vary from 26 to 78. The higher the score the higher the perceived social support [35].

Hospital Anxiety and Depression Scale: The Hospital Anxiety and Depression Scale (HADS) was developed as a self-evaluation scale to measure the change in level and severity by Zigmoid and Snaith (1983) to define the risk of anxiety and depression in patients [36]. Reliability and validity studies of the scale for Turkey were conducted by Aydemir et al (1997). The statements of the scale investigate symptoms of depression in 7 items, and anxiety in 7 items. The responses are evaluated by a four-point Likert response with scores between 0-3. The threshold score has been defined as 10/11 for anxiety subscale, and 7/8 for depression subscale [37].

Statistical Analysis

For assessment of sociodemographic properties, desciptive statistical techniques such as percentage or mean were utilised. Pearson correlation analysis was utilised for determination of relation between posttraumatic growth scale, impact of event scale, perceived social support scale and hospital anxiety and depression scale. Independent samples t test was used to compare the scores of posttraumatic growth scale, ÇYDTK scale and hospital anxiety and depression scale in patients with or without postraumatic stress disorder. We used Mann-Whitney U test to compare the scores of posttraumatic growth and impact of event in patients, who do not desire to undergo prothesis surgery and other group. Hierarchical regression analysis was applied to observe, whether the scores of impact of event scale may be explained by the scores of posttraumatic growth scale, HAD scale anxiety subscale and perceived social support scale friend subscale in patients with or without posttraumatic stress disorder. Normality assumption was met for Pearson correlation analysis, independent samples t test and hierarchical regression analysis. Significance level for all analyses utilised in study was accepted to be p<0.05. IBM SPSS Statistics 22.0 software was used to evaluate the data.

Results

The mean value of Posttraumatic Growth Scale (PTGS) was found to be 71.3±28.4. The age range of participants varied between 29 and 65, the age average was 52.70±9.57. The mean year of education of patients was 6.50±4.41. Of the participants: 6 (7.5%) were single, 65 (81.3%) were married, 4 (5%) were divorced, and 5 (6.3%) were widow. Moreover, of the participants, 9 (11.3%) have low income, 64 (80%) have middle income, and 7 (8.8%) have high income. Of the patients: 5 (6.3%) had mass excision, 73 (91.3%) underwent unilateral mastectomy; and 2 (2.5%) underwent bilateral mastectomy. While 65 of the patients (81.3%) underwent single surgery, 15 of the patients (18.7%) had more than one surgeries. The mean value for chemotherapy courses patients received was 5.46±2.51, and radiotherapy course received was 7.32±11.18. 7 of the patients (8.8%) underwent breast prothesis surgery, and 10 patients (12.5%) were scheduled for prothesis surgery. Other patients indicated that they do not consider to undergo prothesis surgery. Of the participants, 18 (22.5%) did not go through menopause. Pursuant to IES scale cutoff score, it was observed that 30 participants (37.5%) had posttraumatic stress disorder related to breast operation undergone.

According to Pearson correlation analysis, a significant negative correlation (r=-0.22, p<0.05) was observed between total posttraumatic growth scale score and total impact of event scale scores. Furthermore, a significant negative correlation was observed between total posttraumatic growth scale score and impact of event scale living over subscale (r=-0.24, p<0.05), and avoidance subscale (r=-0.23, p<0.05). A significant positive relation was found between total posttraumatic growth scale scores and total perceived social support scale scores (r=0.27, p<0.05). In addition, a positive relation was observed between total posttraumatic growth scale scores and perceived social support scale friend subscale (r=0.23, p<0.05), and special one subscale (r=0.28, p<0.01). No significant relation was detected between total posttraumatic growth scores and hospital anxiety and depression scale. A significant negative relation was perceived between total impact of event scores and total perceived social support scale scores (r=-0.26, p<0.05), and perceived social support scale score friend subscale (r=-0.33, p<0.01). Additionally, while a moderately positive correlation was determined between total impact of event scores and HAD scale anxiety subscale (r=0.44, p<0.01); a significantly positive correlation was found with hospital anxiety and depression scale depression subscale (r=0.26, p<0.01). A significantly negative correlation was observed between impact of event scale living over subscale and total perceived social support scale scores (r=-0.23, p<0.05), and perceived social support scale friend subscale (r=-0.30, p<0.01). A significantly negative correlation was observed between impact of event scale aviodance subscale and total perceived social support

scale scores (r=-0.25, p<0.05), and perceived social support scale friend subscale (r=-0.33, p<0.01). Moreover, a significantly negative correlation was observed between impact of event scale overstimulation subscale and total perceived social support scale scores (r=-0.24, p<0.05), and perceived social support scale friend subscale (r=-0.30, p<0.01). Meanwhile, a significantly positive correlation was found between whole subscales pertaining to impact of event scale, hospital anxiety and depression scale anxiety and depression subscales. A significantly negative correlation was detected between hospital anxiety and depression scale, and total perceived social support scale scores (r=-0.28, p<0.05), family support subscale (r=-0.22, p<0.05), friend support subscale (r=-0.22, p<0.05), and special one support subscale (r=-0.26, p<0.05) (Table 1).

Tablo 1. The relationship between PTGI, IES-R, PSSS and HADS.

	1	2	3	4	5	6	7	8	9	10	11	12	13
1- PTGI	-												
2- Changes in interpersonal relations	-0.01												
3- Changes in idea of life	-0.08	0.90**											
4- Changes in opinion of oneself	-0.09	0.89**	0.85**										
5- IES-R	-0.22*	0.17	0.11	0.16									
6- Intrusion	-0.24*	0.16	0.11	0.14	0.95**								
7- Avoidance	-0.23*	0.13	0.06	0.14	0.88**	0.71**							
8- Hyperarousal	-0.14	0.18	0.13	0.15	0.95**	0.92**	0.73**						
9- PSSS	0.27*	0.06	0.07	-0.01	-0.26*	-0.23*	-0.25*	-0.24*					
10- Family support	0.18	0.13	0.12	0.07	-0.16	-0.13	-0.15	-0.17	0.92**				
11- Special one support	0.23*	0.05	0.10	-0.02	-0.33**	-0.30**	-0.33**	-0.30**	0.85**	0.71**			
12- Friend support	0.28**	-0.04	-0.05	-0.09	-0.15	-0.15	-0.14	-0.13	0.78**	0.64**	0.43**		
13- HADS Anxiety Subscale	-0.00	0.04	0.01	0.02	0.44**	0.46**	0.32**	0.45**	-0.28*	-0.22*	-0.26*	-0.24*	
14- HADS Depression Subscale	0.04	0.16	0.16	0.13	0.26*	0.24*	0.23*	0.27*	-0.19	-0.13	-0.19	-0.17	0.69**

PTGI=Posttraumatic Growth Inventory, IES-R=Impact of Event Scale Revised, PSSS=Perceived Social Support Scale, HADS=The Hospital Anxiety and Depression Scale (HADS),*p<0.05, **p<0.01.

In independent samples t test, pursuant to impact of event cutoff score, the mean posttraumatic growth scores of patients without posttraumatic stress disorder are significantly higher than that of patients with posttraumatic stress disorder(F=0.02, p<.0.05). In addition, there was no difference in terms of posttraumatic growth subscale scores in patients with or without posttraumatic stress disorder. For patients with posttraumatic stress disorder, the mean scores of perceived social support scale friend subscale are significantly higher than the mean scores of patients with posttraumatic stress disoder (F=4.23, p<0.01). In addition, for patients with posttraumatic stress disorder, the mean scores of hospital anxiety and depression scale anxiety subscale is significantly higher than those not suffering from posttraumatic stress disorder (Table 2).

Pursuant to Mann Whitney U test, the mean scores of impact of event scale (p value), impact of event scale avoidance (p value) and overstimulation (p value) subscales are lower in patients, who has breast prothesis, or scheduled for prothesis surgery. In addition, there was no difference between two groups in terms of the mean scores of posttraumatic growth and posttraumatic growth subscale scores (Table 3).

In first step of hierarchical regression model, posttraumatic growth scale that is determined to be associated with impact of event scale in literature was added. Moreover, since pursuant to independent samples t test, there was difference only in total scores of posttraumatic growth scale, friend support subscale and anxiety subscale; in hiearchical model, the scores of friend support subscale and anxiety subscale were tested. According to hierarchical regression analysis, it was found that 10% of total impact of event scores for 50 patients without posttraumatic stress disorder are explained by total posttraumatic growth scores (p<0.05). In addition, addition of total scores of friend subscale and anxiety subscale to Model 1 did not cause difference for explanatoriness (Table 4). According to hierarchical regression analysis, it was found that total impact of event scores for 30 patients with posttraumatic stress disorder are not explained by total posttraumatic growth scores. However, while addition of friend subscale to Model 2 increased explanatoriness by 11%; addition of anxiety subscale scores by 36%. Moreover, at the end of model (Step 3), total scores of posttraumatic growth, friend support subscale and anxiety subscale were deemed as influential factors for explaining total scores of impact of event scores (Table 4).

Tablo 2. Comparisons of PTGI, PSSS and HADS between patients with and without PTSD.

	PTSD (+) N=30	PTSB(-) N=50	F	95% CI Lower	Upper
PTGI	61.20±26.97	77.30±27.71	0.02*	-28.71	-3.48
Changes in interpersonal relations	24.10±8.10	22.16±11.37	12.58	-2.78	6.66
Changes in idea of life	16.83±6.35	16.06±7.83	3.876	-2.59	4.13
Changes in opinion of oneself	33.43±10.15	31.18±12.99	4.40	-3.27	7.77
PSSS	69.50±13.743	75.24±12.99	0.60	-11.84	0.36
Family support	23.66±5.74	24.92±4.82	2.05	-3.63	1.13
Special one support	21.56±6.36	25.08±5.00	4.23**	-6.06	-0.96
Friend support	24.26±5.11	25.24±4.52	0.39	-3.15	1.21
HADS Anxiety Subscale	6.13±3.76	5.10±3.83	0.00	-0.71	2.78
HADS Depression Subscale	7.43±5.06	4.56±3.22	12.32**	1.03	4.71

PTGI=Posttraumatic Growth Inventory, PSSS=Perceived Social Support Scale, HADS=The Hospital Anxiety and Depression Scale (HADS), *p<0.05, **p<0.01.

Tablo 3. Comparisons of PTGI and IES-R between patients with and without breast prosthesis.

	Patients who had breast prosthesis, or who were scheduled for breast prosthesis surgery N=17	Patients who did not desire to undergo breast prosthesis N=63	Z
PTGI	79.82±25.60	68.95±28.82	-1.51
Changes in interpersonal relations	22.29±9.93	23.04±10.41	-0.56
Changes in idea of life	14.94±7.58	16.73±7.21	-0.97
Changes in opinion of oneself	29.70±12.14	32.65±11.96	-1.12
IES-R	15.00±14.33	27.23±21.62	-2.21*
Intrusion	6.11±6.33	10.42±8.98	-1.94
Avoidance	5.05±5.69	9.42±7.83	-2.51*
Hyperarousal	3.82±3.81	7.38±6.52	-2.04*

PTGI=Posttraumatic Growth Inventory, IES-R=Impact of Event Scale Revised,*p<0.05, **p<0.01.

Discussion

In this study, it was observed that 37.5% of breast cancer patients are diagnosed with posttraumatic stress disorder. In studies performed on breast cancer patients, it was proven that posttraumatic stress disorder prevelance may vary between 7.3% and 69% in accordance to type of assessment, duration after disease, age, culture and race [27-29,38]. The prevelance of posttraumatic stress disorder in breast cancer patients found to be 37.5% in this study may be related to the fact that diagnosis was given by a psychometric measure and that measurements were performed one year after diagnosis. Moreover, when percentages in other studies are taken into consideration, it is possible to say that the prevelance of posttraumatic stress disorder diagnosis in Turkish breast cancer patients is similar to some other studies.

Upon search of literature, the mean posttraumatic growth scale scores range between 57.8-73.0 in breast cancer patients [19,39-41]. In this study, the prevelance of mean posttraumatic growth scale score in breast cancer patients was determined as 71.3±28.4; and a negative correlation was found between posttraumatic growth and the symptoms of posttraumatic stress disorder. The posttraumatic growth level in study was found to be consistent with the mean posttraumatic growth values obtained from other breast cancer patients. In addition, it supports the hypothesis that the negative correlation between posttraumatic growth and posttraumatic stress disorder may cause posttraumatic stress disorder to have negative influence on posttraumatic growth. It was determined that the higher the oral communication and emotional support, the higher posttraumatic growth in women [42,43]. Therefore, utilisation of mental treatment strategies that may support posttraumatic growth with the intention to help breast cancer patients to cope with the symptoms of posttraumatic stress disorder may increase adherence to treatment.

In literature, it is reported that behaviours such as intrusive thoughts and avoidance are widely-known symptoms [28]. Horowitz's two factor model lie behind posttraumatic stress disorder diagnosis nowadays. In this two dimension model based on information processing; an individual, who experienced a trauma, have intrusion of annoying thoughts and feelings; and thus, the person has avoidance behaviour to get

Tablo 4. Hierarchical regression analysis results for IES-R scores.

PTSD (-)							95% CI	
Model 1	R2	Adjusted R2	B	SE	Beta	p	LL	UL
Step1								
Constant	0.12	0.10	19.40	3.13		<0.001	13.10	25.70
PTGI			-0.09	0.03	-0.34	0.013	-0.17	-0.20
Step 2								
Constant	0.12	0.08	17.29	5.88		0.005	5.44	29.14
PTGI			-0.10	0.03	0.30	0.013	-0.17	-0.02
Friend support			0.09	0.21	-0.35	0.673	-0.34	0.52
Step 3								
Constant	0.12	0.06	17.40	6.66		0.012	3.99	30.81
PTGI			-0.10	0.04	0.31	0.018	-0.18	-0.01
Friend support			0.08	0.23	-0.32	0.707	-0.38	0.560
HADS Anxiety Subscale			-0.013	0.36	0.50	0.972	-0.75	0.72
PTSD (+)								
Model 2								
Step 1								
Constant	0.05	0.02	36.28	8.16		<0.001	19.55	53.01
PTGI			0.15	0.12	0.23	0.205	-0.09	0.41
Step 2								
Constant	0.17	0.11	54.88	12.24		<0.001	29.77	80.00
PTGI			0.20	0.11	0.30	0.097	-0.04	0.44
Friend support			-0.99	0.50	-0.35	0.059	-2.02	0.04
Step 3								
Constant	0.42	0.36	39.44	11.33		0.002	16.15	62.73
PTGI			0.20	0.10	0.31	0.050	0.00	0.41
Friend support			-0.90	0.42	-0.32	0.045	-1.78	-0.02
HADS Anxiety Subscale			1.79	0.52	0.50	0.002	0.70	2.87

Model 1: 50 individuals without PTSD according to IES-R. Step 1: Variables entered in the first step: PTGI; F = 6.596, df = 7.412, p < 0.05, R2 change = 0.121. Step 2: Variables entered in the second step: Friend Support Subscale; F = 3.332, df = 7.476, p < 0.05, , R2 change = 0.003. Step 2: Variables entered in the third step: HADS Anxiety Subscale; F = 2.174, df = 7.556, p=0.104, R2 change = 0.000.
Model 2: 30 individuals with PTSD according to IES-R. Step 1: Variables entered in the first step: PTGI; F = 1.681, df = 17.786, p=0.205, R2 change = 0.057. Step 2: Variables entered in the second step: Friend Support Subscale; F = 2.863, df = 16.939, p=0.075, , R2 change = 0.118. Step 2: Variables entered in the third step: HADS Anxiety Subscale; F = 6.505, df = 14.363, p<0.01, R2 change = 0.254. LL=Lower Limit, UL=Upper Limit.

over the situation [44]. This may explain why posttraumatic growth scale scores are related to living over the event subcale and avoidance subscale scores. In other words, increased intusive thoughts and avoidance behaviour in breasr cancer patients may be considered as factors affecting posttraumatic growth in a negative manner.

It was observed that posttraumatic growth and friend support is lower in patients with posttraumatic stress disorder; and them symptoms of anxiety are more observed in such patients. For posttraumatic growth, death threat should be seized during traumatic event; person should experience the helplessness and refractoriness related to the event; induced ruminations and experiencing stress symptoms related to trauma should be experienced [45]. These processes show PTSD and PTG to be two entwined notions assessed under the umbrella of trauma, and going in hand in hand with information processing processes. Furthermore, findings of this study show that level of posttraumatic growth related to disease in breast cancer patients is associated with diagnosis of posttraumatic stress disorder. In other words, traumatic experiences related to disease not being at the level to induce posttraumatic stress disorder in breast cancer patients may enchance posttraumatic growth development.

Calhoun and Tedeschi (1998) indicated that social support systems are crucial for development of posttraumatic growth [11]. Meanwhile, it is reported that social support system is one of the important factors for enhancing posttraumatic growth [46-48]. Having good perceived social support system stimulates compliance to breast cancer and coping with the disease. Thus, the significant increase observed in perceived social support level as the posttraumatic growth is increased and patients without posttraumatic stress disorder having more friend support may be explained. Moreover, difference for friend support among patients with or without posttraumatic stress disorder may be related to the fact that Turkish family relations are still maintained in accordance to cultural and traditional (having

extended family, etc.) values. In recent studies, it was determined that Turkish family structure is mostly maintained in accordance to traditional family structure (extended family, strong relative relations, etc.) [49,50].Therefore, programs mediating breast cancer patients to socialise with other people except from their family members or spouses may help reduce the symptoms of posttraumatic stress disorder.

Accepting the impact of stressful event, playing an active role for developing the situation and revaluating the event more positively are processes that have positive influence for posttraumatic growth [39,51]. Encountering less posttraumatic stress disorder symptoms in patients who have underwent prothesis surgery, or who are scheduled for surgery may be related to this situation. Therefore, self-respect reduced after disease, and sexuality and femininity affected negatively in patients [3,4].after prothesis surgery may be corrected easily. In other words, prothesis surgery may reduce the negative physical and mental effects emerging in the sequel of breast cancer.

According to hierarchical regression analysis; 10% of traumatic symptoms are explained by PTG symptoms in patients with posttraumatic stress disorder; however, addition of other factors significantly reduces explanatoriness. PTG is not an efficient factor for patients with posttraumatic stress disorder, and while 11% of posttraumatic stress disorder symptoms were explained by friend support subscale; 36% of posttraumatic stress disorder symptoms were explained by anxiety subscale and friend subscale. It is reported that focusing only on posttraumatic stress disorders may limit or decelerate recovery, and may conceal posttraumatic growth potential [15]. Therefore, hierarchical model used in this study makes us consider that prioritisation of social support and anxiety symptoms before posttraumatic growth for breast cancer patients with posttraumatic stress disorder may be beneficial. On the other hand, posttraumatic growth should be focused before social support an anxiety in breast cancer patients without posttraumatic stress syndrome.

The important limitations of the study include nonhomogeneity of treatment processes of patients admitted to the study, and low number of study participants. Besides, another important limitation of the study is utilisation of self report scales rather than structured clinic interviews to measure the symptoms of posttraumatic stress disorder, anxiety and depression in breast cancer patients.

Conclusion

The symptoms of posttraumatic stress disorder significantly reduces posttraumatic growth in breast cancer patients. In addition, posttraumatic growth and friend support is less in breast cancer patients diagnosed with posttraumatic stress disorder. Increasing social support prior to PTG in breast cancer patients with PTGS and focusing on anxiety treatment in such patients may be more beneficial. In addition, primarily supporting PTG development in breast cancer patients without PTSD may help to reduce traumatic symptoms related to disease in such patients.

Declaration of conflict of interest

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