Original Article

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Impact of Personality Traits, Anxiety, Depression and Hopelessness Levels on Quality of Life in the Patients with Breast Cancer

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ABSTRACT

Objective: The aim of this study was to investigate the impacts of personality traits, anxiety, depression and hopelessness levels on quality of life in the patients with breast cancer.

Materials and methods: The study was performed on 90 patients diagnosed with breast cancer and 90 healthy women. Sociodemographic and Clinical Data Collection Form designed by us, Beck Hopelessness Scale (BHS), Beck Anxiety Scale (BAS), Beck Depression Scale (BDS), Eysenck Personality Inventory (EPI) and Quality of Life Scale–Short Form (SF-36) were administered to patients and to control group.

Results: The patients with breast cancer were found to indicate higher levels of anxiety and depression, lower levels of quality of life, and higher scores of personality inventory subscales as compared to the healthy control group. In the patient group, it was identified that the quality of life subscale scores were found to be negatively correlated with anxiety, depression, hopelessness and neurotic personality scores; there was a positive correlation between neurotic personality scores and depression, anxiety and hopelessness scores.

Conclusions: It can be concluded that the breast cancer patients with extraversion personality traits have lower levels of anxiety and depression, keeping their quality of life better, whereas the patients with higher neuroticism scores may have more impaired quality of life. Therefore, the psychiatric evaluation of the breast cancer patients during and after the treatment cannot be ruled out.

Keywords: Breast cancer, personality, anxiety, depression, quality of life

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Introduction

Diagnosis and treatment of breast cancer have considerable psychological influences on women (1). After the establishment of the diagnosis of breast cancer, fear of death, hopelessness and fears related to expected change of life, along with impaired quality of life due to treatment may give rise to negative perceptions in patients. Then, after primary treatment, fear of recurrence, changes in mood, increased

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sensitivity, uncertainty, sense of loss (e.g., fertility), body image disturbance, decrease in self-esteem, sexual problems, economic concerns, family-related issues and emotional problems may show up (2, 3). 20-35% of the female breast cancer patients experience psychiatric disorders such as depression and anxiety at any time of their disease regardless of the stage of the disease and treatment status (4). In their study on 222 patients with early stage breast cancer, Burgess et al. (5) found the prevalence of depressive and anxiety disorders as 33% at the time of diagnosis, 15% after one year from diagnosis, and 45% at the time of the diagnosis of recurrence, and indicated in the same study that frequency of anxiety and/or depression in female patients with breast cancer was two times more than the general female population. It was suggested that even 1 year after treatment, one third of the patients continued to have psychiatric disorder comorbidity (6). Recent studies have shown that psychiatric comorbidity is associated with increased symptom load, decreased adherence to therapy and impaired quality of life (7-9).

In addition to the signs of psychiatric disorders, the hypothesis that personality is associated with the risk of breast cancer and survival has been brought forward for a long time. A study conducted using Eysenck personality inventory (EPI) showed that the breast cancer patients with higher extraversion scores tended to have a lower risk of death. Findings available have demonstrated that personality has a considerable impact on development and progression of breast cancer (10). Neuroticism was defined as the personality trait most often associated with different aspects of breast cancer survival such as fatigue, lower level of quality of life and depression. It was also underlined that in addition to conservative therapy of breast cancer, personality, acceptability and neuroticism were important factors responsible for the emergence of depressive symptoms a year after surgical therapy (11). Moreover, in post-chemotherapy patients with breast cancer, cancer-related fatigue level was found to be correlated with psychoticism, extraversion/introversion, neuroticism and lie subscales of EPI (12). There are few studies on investigation of the relationship between personality traits and the quality of life in the patients with breast cancer. Thus, the present study was designed to explore the impacts of personality traits, anxiety, depression and hopelessness levels on quality of life in patients with breast cancer.

Materials and Methods

Subjects

This study incorporated 90 patients aged between 18 and 65 and diagnosed with breast cancer who presented to our hospital for outpatient and inpatient treatment and who gave written consent to take part in the study as well as a control group of 90 healthy subjects who were matched to the patient group by age and sex. Inclusion criteria for the patient group was set as follows: being aged between 18 and 65, being literate, accepting to take part in the study, having been diagnosed with breast cancer, being at stage 1, 2 or 3 of the disease at the time of study, having no other types of cancer, not having received for a period of at least 3 months any of combined therapies including radiotherapy and chemotherapy other than hormone therapy. Exclusion criteria included having mental retardation or any disorder associated with alcohol and substance use, having schizophrenia or any other psychotic disorder, having dementia or any other cognitive disorders, having any neurological diseases such as epilepsy, multiple sclerosis or Parkinson's disease, and having any systemic diseases that might lead to cognitive impairment. On the other hand, the control group was formed by healthy volunteers who were literate, aged between 18 and 65, and who agreed to participate in the study. This study was approved by the ethics committee of the İstanbul Bilim University.

Assessments

In the light of the clinical experience and literature review and considering the purposes of the study, both patient and control groups were administered semi-structured Sociodemographic and Clinical Data Collection Form, Beck Hopelessness Scale (BHS), Beck Anxiety Scale (BAS), Beck Depression Scale (BDS), Eysenck Personality Inventory (EPI) and Quality of Life Scale–Short Form (SF-36). The scales of the study were applied under the supervision of psychiatrists and psychologists.

Patient Follow-up Form (Sociodemographic and Clinical Data Collection Form): Having been filled in by the research physician, this form included questions relating to patient's age, sex, marital status, educational background, working status, smoking and alcohol habits, and medical history of every patient and her relatives.

Beck Hopelessness Scale (BHS): This scale was developed by Beck et al. Validity and reliability study for the Turkish version was conducted by Seber et al. (13). This instrument is designed to measure an individual's negative attitudes about the future (13). Subsequently, Dell further studied this scale, and obtained more comprehensive information on the scale's validity, reliability and factor structure. BHS is a 20-item inventory, being scored from 0 to 1. Higher total scores are indicative of higher levels of hopelessness (14).

Beck Anxiety Scale (BAS): This scale was developed by Beck et al. (15) in 1988 in response to the need for a scale that was able to distinguish anxiety from depression. It is designed to measure severity of anxiety symptoms experienced by individuals. It interrogates subjective anxiety and bodily symptoms. Consisting of 21 items and being scored from 0 to 3 as based on the Likert scaling, it is a self-report scale. Total scores range from 0 to 63. Higher total scores indicate more severe anxiety levels experienced by the subject. Validity and reliability study for Turkish version of this inventory was performed by Ulusoy et al. (16).

Beck Depression Scale (BDS): As a self-report inventory, BDS was designed was Beck in 1961 to measure emotional, cognitive, somatic and motivational components (17). The inventory consists of 21 items, two of which are oriented to emotions, eleven to cognitions, two to behaviors, five to physical symptoms, and one to interpersonal symptoms. It consists of 21 questions in total, each answer being scored on a scale value of 0, 1, 2, and 3, to obtain a score ranging from 0 to 63. As based on the total scores, 0–9 indicates no/minimal depression, 10–18 indicates mild depression, 19–29 indicates moderate depression, and 30–63 indicates severe depression. Used to detect the intensity of depressions, BDS was tested for its suitability to Turkish society by a validity and reliability study conducted by Hisli (18).

Eysenck Personality Inventory (EPI): This instrument allows for assessment and measurement of such dimensions of personality as neuroticism-stability, extraversion-introversion, psychoticism and lie in the context of Eysenck's personality theory. It is a self-report scale comprising of 24 yes/no items and 4 subscales. The validity and reliability of this instrument in Turkish language was tested by Karancı et al. (19) in 2007.

Table 1. Sociodemographic characteristics of the patient and control group

		Patient group N(%)	Control group N(%)	p
Age		50.43±7.45 (mean+SD)	50.28±7.11 (mean+SD)	0.886
Education status	Primary school	18(19.8)	56(53.8)	0.062
	High school	18(19.8)	28(26.9)	
	College	14(15.4)	8(7.7)	
	University	41(45.1)	12(11.5)	
Marital status	Single	39(42.9)	59(56.7)	0.455
	Married	52(57.1)	45(43.3)	
Working status	Housewife	56(61.5)	69(66.3)	0.456
	Working	35(38.5)	35(33.7)	

Mean±SD= mean±standard deviation; *: p<0.05

Table 2. Scale scores of the patient and control group

	Patient group N:90 (Mean±SD)	Control group N:90 (Mean±SD)	p
BDS	8.93±7.09	3.99±4.22	0.000*
BHS	4.80±3.62	3.82±4.0	0.088
BAS	13.94±10.18	5.38±5.43	0.000*
P-FUNC	26.59±3.12	73.61±21.09	0.000*
P-ROLE	7.3±1.2	26.92±21.21	0.000*
PAIN	9.45±2.46	77.34±22.7	0.000*
G-HEALTH	17.46±2.28	65.56±27.74	0.000*
LIVE	16.29±2.42	51.61±19.10	0.000*
S-FUNC	7.71±1.99	70.01±23.98	0.000*
E-ROLE	4.76±1.12	32.38±19.08	0.000*
M- HEALTH	25.90±3.02	67.93±15.78	0.000*
E-N	12.01±5.15	2.47±1.27	0.000*
E-E	11.81±3.97	2.72±1.83	0.000*
E-P	7.41±4.68	1.5±1.25	0.000*
E-L	12.10±4.41	3.38±1.68	0.000*

BDS: beck depression scale; BHS: beck hopelessness scale;
BAS: beck anxiety scale; P-FUNC: physical function;
P-ROLE: physical role weakness; G-HEALTH: general health perception;
LIVE: life; S-FUNC: social functioning; E- ROLE: emotional role;
M-HEALTH: mental health; E-N: eysenck neuroticism;
E-E: eysenck-extrovert; E-P: eysenck-psychotism; E-L: eysenck-lie;

Quality of Life Scale– Short Form (SF-36): This form is designed to measure quality of life among those with physical disease and psychiatric disorder, as well as healthy subjects. The form consists of 36 items and investigates eight dimensions of health: physical functioning, role limitations (arising from physical and emotional issues), social role functioning, mental health, vitality (energy), bodily pain and general health perceptions. As there is no standard total score, scores from eight sections are summed up (20). A validity and reliability study of the Turkish version of SF-36 has been conducted (21).

Statistical analysis

Statistical analyses were performed using Statistical Packages for the Social Sciences (SPSS) version 17 (SPSS Inc.; Chicago, IL, USA). Compatibility of the variables to normal distribution was assessed both visually (via histograms and probability graphs) and analytically (Kolmogorov-Smirnov/Shapiro-Wilk tests). Descriptive statistics were illustrated using medians from frequency tables for non-normally distributed variables, whereas the variables with normal distribution were illustrated using means and standard deviations. Differences were compared with the help of one-way Analysis of Variance (ANOVA) test. Homogeneity of variances was evaluated by means of Leven's test. Any outcome for which the p–value was less than 0.05 was considered as being statistically significant. In cases where there existed significant differences between groups, Dunnett's test was used in doubles. In analysis of quantitative variables chi-square test was employed. Regarding the relations between BHS, BAS, BDS, EPI and SF-36 form, correlation coefficients and statistical significances were calculated with the help of Spearman test. Type-1 error rate for statistical significance was established as 5%.

Results

This study included 90 patients who were diagnosed with breast cancer and satisfied inclusion criteria, as well as 90 healthy women who matched the patient group in terms of age and sex. The mean age was 50.43±7.45 and 50.28±7.11 in the patient group and the control group, respectively. No statistically significant difference was identified between the patient group and the control group in terms of sociodemographic attributes, except smoking habits and bodily illness record in family history (p>0.05) (Table 1). While all the BAS, BDS scale scores and SF-36 and EPI subscale scores were statistically significantly different in the patient group (p<0.05), BHS demonstrated no statistically significant difference (p>0.05) (Table 2).

In consequence of the correlation analysis between BDS and SF-36 subscale scores in the patient group, a negative correlation was present between BDS scores and SF-36 subscales: physical functioning (r=-0.345, p=0.001), physical role difficulty (r=-0.431, p=0.000), pain

Table 3. Correlation results between the EPI, BDS, BAS, BHS levels and SF-36 subscales

		P-FUNC	P-ROLE	PAIN	G-HEALTH	LIVE	S-FUNC	E-ROLE	M-HEALTH
E-N	r	-.269*	-.189	-.270*	-.203	-.267*	-.170	-.288*	-.274*
	p	.010	.074	.010	.054	.011	.109	.006	.008
E-E	r	.084	.077	.153	.044	.217*	.191	.163	.312*
	p	.433	.471	.151	.681	.040	.071	.124	.003
E-P	r	.014	-.032	.018	.164	-.102	.063	.090	.158
	p	.899	.770	.868	.126	.345	.557	.405	.139
E-L	r	.034	.052	-.060	-.044	.127	-.049	-.017	-.095
	p	.753	.625	.574	.681	.234	.649	.870	.369
BDS	r	-.345*	-.431*	-.366*	-.457*	-.681*	-.248*	-.474*	-.626*
	p	.001	.000	.000	.000	.000	.019	.000	.000
BHS	r	-.201	-.375*	-.153	-.309*	-.410*	-.138	-.279*	-.158
	p	.057	.000	.149	.003	.000	.196	.008	.134
BAS	r	-.435*	-.285*	-.294*	-.275*	-.493*	-.143	-.307*	-.453*
	p	.000	ç007	.005	.009	.000	.180	.003	.000

*: p<0.05
EPI: eysenck personality inventory; E-N: eysenck neuroticism; E-E: eysenck extrovert; E-P: eysenck-psychoticism; E-L: eysenck-lie; BAS: beck anxiety scale; BDS: beck depression scale; BHS: beck hopelessness scale; SF-36: quality of life scale-short form; P-FUNC: physical function; P-ROLE: physical role weakness; PAIN: pain; G-HEALTH: general health perception; LIVE: life; S-FUNC: social functioning; E- ROLE: emotional role weakness; M-HEALTH: mental health

Table 4. Correlation results between EPI subscales and BDS, BAS, BHS scales

		BDÖ	BUÖ	BAÖ
E-N	r	.408*	.223*	.387*
	p	.000	.034	.000
E-E	r	-.257*	-.060	-.117
	p	.014	.573	.273
E-P	r	-.125	-.110	-.045
	p	.245	.308	.677
E-L	r	-.120	-.079	-.108
	p	.262	.461	.310

Mean±SD=Mean±Standard Deviation; *: p<0.05
EPI: eysenck personality inventory; E-N: eysenck neuroticism; E-E: eysenck extrovert; E-P: eysenck-psychoticism; E-L: eysenck-lie; BAS: beck anxiety scale; BDS: beck depression scale; BHS: beck hopelessness scale

(r=-0.366, p=0.000), general health perception (r=-0.457, p=0.000), vitality (r=-0.681, p=0.000), social functioning (r=-0.248, p=0.019), emotional role difficulty (r=-0.474, p=0.000) and mental health perception (r=-0.626, p=0.000) (p<0.05). The correlation test between BHS scores and SF-36 subscale scores revealed a negative correlation with physical role difficulty (r=-0,375, p=0.000), general health perception (r=-0.309, p=0.003), vitality (r=-0.410, p=0.000) and emotional role difficulty (r=-0.279, p=0.008) subscales (p<0.05). According to the correlation analysis between BAS and SF-36 subscale scores, BAS scores were identified to have been negatively correlated with physical functioning (r=-0.435, p=0.000), physical role difficulty (r=-0.285, p=0.007), pain (r=-0.294, p=0.005), general health perception (r=-0.275, p=0.009), vitality (r=-0.493, p=0.0009), emotional role difficulty (r=-0.307, p=0.003) and mental health perception (r=-0.453, p=0.000) (p<0.05). Results from the correlation test between EPI subscales and SF-36 subscale scores indicated that Eysenck neuroticism subscale was negatively correlated with physical functioning (r=-0.269, p=0.010), pain (r=-0.270, p=0.010), vitality (r=0.267, p=0.011), emotional role difficulty (r=-0.288, p=0.006) and mental health perception (r=-0.274, p=0.008) (p<0.05), while there was a positive correlation between Eysenck extraversion subscale and vitality (r=0.217, p=0.040), mental health perception (r=0.312, p=0.003) subscales of SF-36 (p<0.05) (Table 3). The correlation analysis between EPI subscale scores and BDS, BHS and BAS subscale scores demonstrated that a positive correlation was present between neuroticism subscale of Eysenck and BDS, BHS and BAS (r=0.408, p=0.000; r=0.223, p=0.034; r=0.387, p=0.000, respectively), whereas Eysenck extraversion subscale was negatively correlated with BDS (r=-0.257, p=0.014) (p<0.05) (Table 4).

Discussion and Conclusion

Breast cancer is one of the most prevalent types of cancer among women. It accounts for 33% of all cancer cases, and 20% of cancer-specific mortalities in women (22). In the patients with breast cancer, serious psychological issues may emerge due to the reasons such as uncertainty about success of therapy, physical symptoms, fear of recurrence and death, changes in gender identity, body image perception and sexual functions, difficulties in daily life activities, family-related problems and lack of emotional support (23-25). The most

common types of psychiatric disorders are depression and anxiety. The comorbidity of depression accompanying breast cancer is as high as 46%, and this rate is even higher within the first year following establishment of initial diagnosis (26). Besides even after 5th year of initial diagnosis, approximately 15% of the patients show depressive symptoms (5). Depressive disorder in the patients with breast cancer negatively affect psychosocial adaptation, deteriorating overall quality of life. This in turn reduces survival rates as a function of the decreased therapeutic suitability (27). A study designed to investigate the impact of disease-related factors and health-related quality of life on depressive symptoms showed that depressive symptoms affected physical well-being, social roles, emotional functions, pain, sleep disorders and vomiting (28). According to another study on health-related quality of life in the patients with breast cancer from the viewpoint of physical symptoms and signs of depression, depressive symptoms affected body image, sexual function, sexual drive and long-run future expectation with the combined impact of physical symptoms, which accounted for 57% of all depressive symptoms, mainly in four areas including arm, chest, hair and other side effects. In a study by Karakoyun et al. (9) on the women with breast cancer, it was reported that anxiety and depression put a negative impact on the quality of life and cancer fighting. In addition, social support and notably family support were reported to have reduced depressive symptoms and improved the quality of life (9, 29). Another study on the relationship between anxiety and quality of life in the patients with breast cancer showed that functional dimensions including physical, emotional, social and cognitive functions suffered from deterioration in the patients showing the signs of anxiety, and that a positive correlation was present between anxiety scores and body image, future expectations and sexual function (30). Cognitive attitudes such as hopelessness, desperation and lack of support were found to be associated with depression at a statistically significant level (31). In the context of the present study, all subgroups of anxiety, depression and quality of life scores were found to be statistically significantly different in the breast cancer group compared with the control group.

According to the correlation analyses between the quality of life and depressive symptoms in the patients with breast cancer, impaired functioning and quality of life as part of symptoms were shown to have affected depressive symptoms (32). Another similar study demonstrated that the quality of life was affected by depressive symptoms, negative body perception, hopelessness, negative associations to future expectations and somatic symptoms (33). It was also observed that in breast cancer patients with high levels of anxiety, physical and other functions remained in a bad state during and after treatment, and that the scores representing the sense of feeling emotionally good were considerably affected. In those with higher depressive scores, on the other hand, levels of functioning in physical, social and emotional dimensions were reported to be weak (34). In a similar vein, our study detected a negative correlation between anxiety and depression scores and the dimensions of quality of life: physical functioning, physical role difficulty, pain, general health perception, vitality, emotional role difficulty and mental health perception.

Limited number of studies have been made on whether there are differences in the patients with breast cancer and the general population in terms of personality traits. However, it has been addressed that personality traits might affect traumatic life events such as cancer (35). It is neuroticism, one of the sub-dimensions of Eysenck personality inventory, which has been considered the most associated personality trait with different aspects of breast cancer survival such as fatigue, lower level of quality of life and depression (11). Former studies showed no difference between the patients with breast cancer and the control group in terms of extraversion and neuroticism, while some researchers emphasized that breast cancer patients indicated higher psychoticism scores compared with the control group (35). Yet, cancer survivors including breast cancer survivors were reported to have lower levels of psychoticism, which was associated with lower levels of quality of life (36). In keeping with this, another study suggested that the psychoticism was a personality trait which was the predictor of depression and bodily symptoms in breast cancer survivors (35). The present study found that neuroticism, psychoticism, extraversion and lie subscale scores were higher than those of the control group. Furthermore, neuroticism scores were found to be positively correlated with depression and anxiety scores. The patients with higher extraversion scores demonstrated lower depressions scores.

Researches on the relationship between personality traits and the quality of life reported that the patients with higher neuroticism scores had poorer quality of life (37). Emotional and total scores of the quality of life were found to be lowered by personality disorder, depressive disorder, having weaker coping mechanisms, and keeping self-accusatory personality traits in the forefront (38). The patients with breast cancer indicating the signs of personality disorders were found to be under a higher risk of having post-treatment generalized anxiety disorder and major depressive disorder (39). Moreover, a weak correlation was detected between the power of scale scores indicative of absence of affective behaviors or lack of confidence in subjective sensations and development of breast cancer (40). In our study, on the other hand, neuroticism scores were found to be negatively correlated with following subscales of the quality of life: physical functioning, pain, vitality, emotional role difficulty and mental health perception, whereas extraversion subscale of Eysenck personality inventory showed a positive correlation with SF-36 vitality, social functioning and mental health perception subscales. In other words, neurotic breast cancer patients showing signs of anxiety and concern experienced a greater deterioration in quality of life. Besides that, certain subscales of the quality of life were positively affected in the extroverted patients who were social and open to verbal contact and communication.

In the present study, anxiety and depression levels of the patients with breast cancer were found to be higher compared with the control group. The patients with higher neurotic personality, anxiety and depression scores were found to have poorer quality of life. Moreover, it was observed that extraverted patients had better quality of life scores, with lower levels of anxiety and depression. Considering both findings from this study and the current literature, it can be concluded that the patients with extraversion personality traits have lower levels of anxiety and depression, keeping their quality of life better, whereas the patients with neurotic personality traits may show symptoms of anxiety and depression, with poorer quality of life. In view of the fact that psychiatric diseases may develop in patients with breast cancer due to their personality traits, which may in turn affect their quality of life, careful psychiatric characterization of these patients and enabling them to receive psychiatric assistance where necessary would definitely put a positive impact on treatment processes.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of İstanbul Bilim University.

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