Effects of Follow-up by Phone Interview and Anger Management Training Provided to Patients with Breast Cancer Undergoing Radiotherapy on Levels of Self-Esteem, Anger and Depression

Birgul OZKAN[1], Selahattin MENTES[2], Ahmet OZTURK[3], Serdar SOYUER[4]

[1] Yıldırım Beyazıt Universty, Faculty of Health Science, Ankara
[2] Pirivate Island Oncology Hospital , Department of Radiation Oncology, Ordu
[3] Erciyes University, Faculty of Medicine, Department of Biostatistics, Kayseri
[4] Erciyes University, Faculty of Medicine, Department of Radiation Oncology, Kayseri, TURKEY

ABSTRACT

Although surgery, medical oncology and radiation oncology are of importance in the management of breast cancers, psychiatry and supporting care such as psych-oncology nursing have an important role in the breast cancer. The present study aimed to measure the effect of follow-up by phone interviews and anger management training provided to patients with breast cancer on the levels of, anger, self-esteem and depression. The present study was conducted as a randomized-controlled experimental study between February, 2012 and February, 2013. The study conducted on patients with breast cancer undergoing radiotherapy in Radiation Oncology Center of Erciyes University, Mustafa Kemal Dedeman Oncology Hospital in ambulatory settings in Kayseri, Turkey. The experiment and control groups included 22 and 20 subjects, respectively. All subjects completed a survey about general characteristics, Speilberger State-Trait Anger Expression Scale, Rosenberg Self-Esteem Scale and Beck Depression Inventory. A significant difference was found between study and control groups in terms of mean overall anger, self-esteem and Beck Depression scores (p< 0.001). A significant difference was found between measurements (p< 0.001). It is recommended to provide home-based care (e.g. phone interviews, home visits) following anger management training in patients with breast cancers and to arrange education program in those receiving radiotherapy.

Keywords: Breast cancer, Anger training, Follow-up by phone, Self-Esteem, Depression

ÖZET

Radyoterapi Alan Meme Kanserli Hastalara Verilen Öfke Eğitiminin ve Telefon İzleminin Hastaların Benlik Saygısı, Öfke, Depresyon Düzeylerine Etkisi

Meme kanserinin tedavisinde cerrahi, medikal ve radyasyon onkolojisi birincil önemde olmasına rağmen radyoloji, patoloji, plastik cerrahi, psikiyatri ve psikonkoloji hemşireliği gibi destek hizmetleri de önemli rol oynamaktadır. Bu çalışma radyoterapi alan meme kanserli hastalara yapılan öfke eğitiminin ve telefonla yapılan izleminin hastaların benlik saygılarına, öfke ve depresyon düzeylerine etkisini ölçmek amacıyla yapılmıştır. Bu araştırma rastgele kontrollü deneysel çalışma olarak şubat 2012 ile şubat 2013 tarihleri arasında yapılmıştır. Araştırma, Erciyes Üniversitesi Mustafa Kemal Dedeman Onkoloji Hastanesi'ne bağlı Radyasyon Onkoloji merkezinde izlenen ve klinikte ayaktan radyoterapi alan meme kanserli hastalar ile yapılmıştır. Deney grubuna 22 ve kontrol grubuna ise 20 hasta alınmıştır. Araştırmada her iki gruptaki hastalara da, tanıtıcı özellikleri içeren anket formu, Rosenberg Benlik Saygısı Ölçeği, Speilberger Öfke Süreklilik ve Öfke İfade Tarzları Ölçeği, Beck Depresyon Ölçeği uygulanmıştır. Öfke, Benlik saygısı, Beck depresyon genel puan ortalamalarına göre deney ve kontrol grupları arasında istatistiksel olarak önemli bir fark bulunmuştur (p< 0.001). Ölçümler arasında istatistiksel olarak anlamlı bir fark bulunmuştur (p< 0.001). Radyoterapi alan meme kanserli hastalara öfke yönetimine ilişkin verilen eğitimin devamında evde izlemlerinin (telefon, ev ziyareti vb) sağlanması, klinikte radyoterapi alan hastaların eğitim programlarının düzenlemesi önerilmektedir.

Anahtar Kelimeler: Meme kanseri, Öfke eğitimi, Telefon izlemi, Benlik saygısı, Depresyon

INTRODUCTION

Breast cancer is the most common one of the non-dermatological cancers and second leading cause of cancer-related deaths following lung cancers among women. Over last decade, mortality rate of the breast cancer has decreased by 2%. Radiotherapy has a major role at every level of breast cancers. The radiotherapy plays a significant role in the management of breast cancers including ductal carcinoma in situ as a component of breast-sparing surgery and locally advanced disease as an adjuvant therapy after mastectomy; and even in metastatic disease with palliative purposes.[1-3]

In the management of the breast cancer, a multidisciplinary approach should be used by taking tumor size, pathological diagnosis, age, menopausal status, hormonal status and psychological status into consideration. Although surgery, medical therapy and radiotherapy have primary role in the management of breast cancer, radiology, pathology, plastic surgery, psychiatry and supportive care such as psycho-oncology nursing play important role.[1,2.] Thus, it has been observed that many patients are facing with several psychological problems and these patients don't know how to cope with these problems.[6-9]

Factors contributing to development of psychological disorder after diagnosis and treatment (even after several years) include fear of death and recurrence, impaired body image and changes in feminity, sexuality and attractiveness.[3,6,7] The cancer-related psychiatric dissorders and cancer psychiatry have been investigated in many studies.[7,9]

Depression is a syndrome characterized by sadness as well as both sadness and anxious mood in some occasions with slowing and stagnating thoughts, speech, motion and physiological functions as well as feelings and thoughts of worthless, meanness, weakness, unwillingness and pessimism. The depression is commonly observed in patients with breast cancer as similar to those with any type of cancer.[3-5,8,9]

As depression is associated to anger directed to ego, building up effective skills for coping with anger is rather important in the prevention of depression. The studies show that structured psychological training directed to the patients with breast cancer and follow-up are effective in reducing levels of depression and anger.[9-11] Several evidence have found that psychosocial interventions in patients with cancer improve quality of life in these patients; facilitate the management of physical adverse effects; and improve psychological status.[4,8,9,12]

There are many psychosocial interventions for patients with breast cancer undergoing radiotherapy and chemotherapy. It has been suggested that telepsychiatric follow-up is an effective innovation which can be used in clinical care, education and investigation.[13-15]

The telepsychiatric follow-up can be provided by several ways including video conference, e-mail or web pages. When pooled results of the studies on this issue were reviewed, it was found that education, counseling and follow-up by phone interviews improved the psychosocial adaptation levels in the patients.[10,11,13] Previous studies have shown that phone interviews in patients with breast cancer are inexpensive and improve their adaptation to society.[11-15] By considering these studies, follow-up by phone interviews can be used to ensure continuity of psycho-oncology care in an effective manner and to maintain nursing care.

To best of our knowledge, there is no study involving follow-up by phone interview in patients with breast cancer in Turkey. In current healthcare system in Turkey, the management and care are largely provided during hospital admission, while no home-based care is provided after discharge. The support and counseling by phone interviews after training of anger management can make the patients to feel that they are not alone and that the management and care are maintained at home. This can reduce the problems faced by patients regarding management of the disease and improve skills of coping with these problems.

The present study aimed to measure the effects of follow-up by phone interview and anger management training provided to patients with breast cancer on the levels of self-esteem, anger and depression.

PATIENTS AND METHODS

The present study was conducted as a randomized-controlled experimental study (including experimental and control groups with pretest and post-test design) between February, 2012 and February, 2013. It was approved by Kayseri Province Ethics

Committee I (01.11.13; #2012/145) in Kayseri, Turkey.

The study conducted on patients with breast cancer who received radiotherapy in Radiation Oncology Center of Erciyes University, Mustafa Kemal Dedeman Oncology Hospital in ambulatory settings in Kayseri, Turkey. The experimental and control groups included 22 and 20 subjects, respectively. The sample size was large enough to allow adequate statistical power to clearly determine the intervention's effectiveness. The use of randomization allowed to obtain two groups of patients with very similar baseline

The hospitalized patients which fulfileld the inclusion criteria were given the odd numbers for the experimental and dual numbers for the control group. After the data collection, PASS 11 (Power Analysis & Sample Size Software) was used to determine the number of samples in each group, $\alpha= 0.05$, power as %100 in the power analysis of all scales used in the study. The research was conducted randomly with a sample set of criteria which was age, educational status and pathological state of the patients. After identifying the experimental and control group all the scales were applied to both groups. All scales used in this study were filled out by the researcher through face to face interviews with patients with breast cancer in the experimental group during the hospitalization (before training), on discharge (after training), and after the 6-month follow-up by phone.

In the present study, both experimental and control groups completed a survey about general characteristics, Speilberger State-Trait Anger Expression Scale, Rosenberg Self-Esteem Scale and Beck Depression Inventory.

Patient selection criteria for experimental and control groups;

• Being aged between 18 and 65 years

• Having breast cancer at stages of 1, 2 or 3

• Being graduated from primary school

General Survey Sheet

The survey sheet included 15 questions about demographic features of the subjects as well as another 15 questions about disease history

Speilberger State-Trait Anger Expression Scale

These scales were developed by Speilberger et al. in 1983[16] and Turkish validity and reliability were demonstrated in 1994 by Özer.[17] The Speilberger Anger State scale attempts to understand how the individual feel himself in general, while the Anger Expression scale attempts to evaluate by which frequency the individual behaves in the stated-manner. Items are randomly distributed in Anger Expression scale. The answers include "almost never" (1), "sometimes" (2), "often" (3) and "almost always" (4). Each subscale includes 8 items.

Table 1. The content of anger and management skills training anger

Topic	Session	Duration(min)
What is anger?	1	30 min
In general, how does the feeling of anger develop?		
The importance of the relationship between anger development and defense mechanisms of ego?		
Why the content of thought underlying the feel of anger is important?		
The development of anger-related behaviors and the importance of the knowledge about this mechanism		
What is the beneficial feature of anger?		
Summary and repeat of the topic		
How does harming feature of anger develop?	2	30 min
The ways to effectively cope with anger and its relationship with psychosomatic diseases		
Discussion of the mechanism which are used to cope with anger by patients and sharing feelings after interactive discussion		
Improving skills for effective coping with anger		
Improving expression of anger via "Expressing feeling with I language" (Role Play)		
Repeat and Completion of Training		

Table 2. The characteristics of patients in experimental and control groups

Characteristics	Experimental Group (n= 22)		Control Group (n= 20)		Tests	P
	n	%	n	%		
Age						
29-34 years	3	13.7	1	5.0	X^2= 3.309	0.507
35-41 years	5	22.8	2	10.0		
42-48 years	9	41.0	9	45.0		
49-54 years	4	18.0	5	25.0		
55 years or older	1	4.5	3	15.0		
Educational Status						
Primary School	3	13.7	4	20.0	X^2 = 2.950	0.566
Secondary School	13	59.3	9	45.0		
High School	2	9.0	2	10.0		
College Degree	4	18.0	5	25.0		
Marital Status						
Married	19	86.5	17	85.0	X^2 = 4.878	
Never married	1	4.5	2	10.0		
Divorced	2	9.0	1	5.0		
Residency						
City	6	27.3	10	50.0	X^2 = 3.914	0.141
Town Center	9	41.0	3	15.0		
Another City	7	31.7	7	35.0		
Weight						
53-63 kg	2	9.0	3	15.0	X^2 = 1.741	0.628
64-74 kg	7	31.7	6	30.0		
75-85 kg	11	50.3	7	35.0		
86-96 kg	2	9.0	4	20.0		
Height						
139-151 cm	2	9.0	4	20.0	X^2 = 1.107	0.575
152-164 cm	17	77.3	13	65.0		
165-177 cm	3	13.7	3	15.0		
Age at first birth						
16-18 years	9	41.0	5	25.0	X^2 = 1.544	0.672
19-21 years	6	27.3	8	40.0		
22-24 years	5	22.7	3	15.0		
25-29 years	2	9.0	2	10.0		
History of Abortion						
Present	7	31.7	5	25.0	X^2 = 0.239	0.625
Not present	15	68.3	15	75.0		
History of Curettage						
Present	8	36.3	9	45.0	X^2 = 0.324	0.569
Not present	14	63.7	11	55.0		
Child					X^2 = 0.349	.555
Have	20	91.0	17	65.0		
Not Have	2	9.0	3	15.0		
History of Surgery						
Present	21	95.5	12	60.0	X^2 = 7.821	.065
Not present	1	4.5	8	40.0		
Type of Surgery						
Radical Mastectomy	13	59.0	8	40.0	X^2 = 6.109	.900
Breast-Sparing Surgery	9	41.0	12	60.0		

Table 2. The characteristics of patients in experimental and control groups *(Continiued)*

Characteristics	Experimental Group (n= 22)		Control Group (n= 20)		Tests	P
	n	%	n	%		
Estrogen (ER)						
0	4	18.0	4	20.0	$X^2 = 6.085$	0.193
1	6	27.3	2	10.0		
6	5	23.0	3	15.0		
7	4	18.0	2	10.0		
8	3	13.7	9	45.0		
Progesterone (PR)						
0	4	18.0	3	15.0	$X^2 = 0.859$	0.835
1	4	18.0	2	10.0		
4	3	13.7	4	20.0		
8	11	50.3	11	55.0		
Cerb B2						
0	14	63.7	11	55.0	$X^2 = 6.085$	0.376
1	2	9.0	5	25.0		
3	6	27.3	4	20.0		
Histopathological Diagnosis						
1 (DCIS ductal carcinoma in situ)	17	77.5	20	100.0	$X^2 = 5.160$	0.076
2 (Intraductal carcinoma)	1	4.5	0	0.0		
3 Intralobular carcinoma	4	18.0	0	0.0		
Grade						
1	4	18.0	1	5.0	$X^2 = 1.746$	0.418
2	13	59.0	14	70.0		
3	5	23.0	5	25.0		
KPS Score						
1 (100)	21	95.5	20	100	$X^2 = 9.31$	0.335
2 (90)	1	4.5	0	0.0		
Tumor Localization						
1 (left upper outer)	6	27.3	6	30.0	$X^2 = 0.616$	0.893
2 (left upper inner)	3	13.7	4	20.0		
6 (right upper outer)	8	23.0	7	35.0		
8 (right lower outer)	5	36.0	3	15.0		
Stage						
2 (I)	7	34.0	4	20.0	$X^2 = 3.941$	0.414
3 (IIA)	4	18.0	6	30.0		
4 (IIB)	3	13.7	4	20.0		
5 (IIIA)	6	27.3	2	10.0		
7 (IIIC)	2	9.0	4	20.0		

Rosenberg Self-Esteem Scale

This scale was developed by Rosenberg in 1965.[18] The Turkish validity and reliability were demonstrated in 1986 by Cuhadaroglu[19] and reliability coefficient was found as 0.75. In that study, alpha value for Rosenberg Self-Esteem scale was found as 0.65. The scale includes 63 questions in 12 domains. First 10 items of the scale was used for the purposes of the present study. In the first 10 items, total score of 0-1 indicates high self-esteem, while scores of 2-4 and 5-6 indicate moderate and low self-esteem, respectively.

Table 3. The mean scores of anger state of the patients in the experimental and the control groups before, after the traning and after follow-up

Groups	Time	Anger Control $\overline{X} \pm SS$	Persistent Anger $\overline{X} \pm SS$	Anger-In $\overline{X} \pm SS$	Anger-Out $\overline{X} \pm SS$	Overall Anger Score $\overline{X} \pm SS$
Experimental	Before Training	7.81±4.63[a]	18.50±6.75[a]	14.54±5.19[a]	13.40±4.81[a]	54.27±17.22[a]
	After Training	13.30±3.77[b]	14.18±3.17[b]	12.18±3.69[a]	12.27±3.70[a]	50.27±9.95[a]
	After Follow-up	14.15±3.09[c]	8.00±3.97[c]	8.13±2.67[b]	8.36±3.18[b]	32.77±9.76[b]
Control	Before Training	12.70±3.71[a]	17.40±5.13[a]	13.90±4.16[a]	11.10±3.41[a]	55.10±8.86[a]
	After Training	11.63±3.20[a]	18.00±4.12[a]	18.40±2.58[b]	9.60±3.40[a]	59.30±5.52[a]
	After Follow-up	8.27±2.31[a]	12.30±4.25[b]	12.10±3.21[a]	12.25±3.60[a]	50.80±5.92[b]
Test		F	F	F	F	F
	Time	4.510	32.949	22.840	3.330	21.202
	Time+ Group	4.454	4.454	9.371	11.453	7.018
	Group	37.104	7.042	26.627	0.245	25.777
	P*	< 0.001	< 0.05	< 0.001	> 0.05	< 0.001
	P+	< 0.05	< 0.05	< 0.001	< 0.001	< 0.05
	P#	< 0.001	> 0.05	< 0.001	< 0.05	< 0.001

P*= between groups; P+= between measurements/times; P#= group-time interaction

The results of multiple comparisons within experimental and control groups are expressed as alphabetic superscripts; identical superscripts indicate insignificant difference, while non-identical superscripts indicate significant difference between groups.

Beck Depression Inventory

The scale was developed by Beck et al. in 1961[20] in order to observe the symptoms and depression-specific attitudes in clinical manner and to gather frequently observed behaviors together. The scale was adapted to Turkish by Hisli in 1988.[21] The clinical observations were systematically collected in 21 symptoms and attitudes were graded as 0-3 according to intensity. Although cut-off point varies in different studies, it has been suggested that 17 points would be adequate to identify clinical depression.[6,20,21] Overall score varies between 0 and 63 points.

Phases of Investigation

The patients in experimental group received anger management training during the radiotherapy period. Anger management trainings were given by 2 or 3 sessions according to Anger Management Training for Patients with Breast Cancer Manual (Table 1). Each session was performed over 25-30 minutes. During this period, controls underwent no intervention.

After radiotherapy, follow-up by phone interview (weekly, at a certain day and hour) were performed for 6 months in experimental group. Phone interviews included repeat of anger management training, counseling and the issues faced by patients. In the present study, telepsychiatric follow-up was performed according to Phone Interview Form for Patients with Breast Cancer which was developed by researchers.

In all subjects, Speilberger State-Trait Anger Expression Scale, Rosenberg Self-Esteem Scale, and Beck Depression Inventory were completed by researchers via face-to-face interview during radiotherapy, one month after anger management training and 6-months follow-up period achieved by phone interviews.

The data obtained from subjects in experimental and control groups were analyzed by using (chi-square) significance test, "Student t test and two-way analysis of variance for repeated measurements. Bonferroni and LSD tests were performed to identify the source of difference in the variables that are found to be significance in the analysis of variance. All statistical analyses were performed by using SPSS Statistics 20.0 (IBM SPSS Inc, Chicago, ILL, USA). P<.05 was considered as significant.

Table 4. The mean scores of self-esteem of the patients in the experimental and the control groups before, after the traning and after follow-up

Groups	Time	Overall Self-Esteem Scores $\overline{X} \pm SS$
Experimental	Before Training	3.51 ± 1.05^a
	After Training	1.72 ± 0.69^b
	After Follow-up	1.06 ± 0.46^c
Control	Before Training	3.02 ± 0.59^a
	After Training	3.20 ± 0.55^a
	After Follow-up	3.38 ± 0.58^b
Test		F
	Time	42.559
	Time+ Group	77.240
	Group	45.261
	P*	< 0.001
	P +	< 0.001
	P #	< 0.001

P= between groups; P+= between measurements/times; P#= group-time interaction*

The results of multiple comparisons within experimental and control groups are expressed as alphabetic superscripts; identical superscripts indicate insignificant difference, while non-identical superscripts indicate significant difference between groups.

Table 5. The mean scores of Beck Depression Inventory of the Patients in the experimental and the control groups before, after the traning and after follow-up

Groups	Time	Overall Beck Depression Score $\overline{X} \pm SS$
Experimental	Before Training	25.63 ± 9.91^a
	After Training	21.59 ± 8.79^b
	After Follow-up	15.63 ± 6.22^c
Control	Before Training	29.70 ± 5.39^a
	After Training	34.60 ± 3.99^a
	After Follow-up	38.35 ± 3.92^a
		F
Test	Time	1.402
	Time+ Group	98.714
	Group	45.029
	P*	< 0.001
	P +	< 0.001
	P #	< 0.001

P= between groups; P+= between measurements/times; P#= group-time interaction*

The results of multiple comparisons within experimental and control groups are expressed as alphabetic superscripts; identical superscripts indicate insignificant difference, while non-identical superscripts indicate significant difference between groups.

RESULTS

The age, educational status and pathological state of the patients were selected to be similar and no significant difference was found between experiment and control groups (p>0 .05; Table 2).

Table 3 presents mean scores in anger scales and subscales of the patients in experiment and control groups after anger management training and follow-up period. The group effect on mean overall anger score was found to be significant (p< 0.001). Measurement/time effect on mean anger score was also found to be significant (p< 0.05; Table 3). In the multiple comparisons performed to identify the source of difference in the experiment group, mean overall anger score after follow-up was found to be significantly lower compared to those obtained both before and after training. In the multiple compari-

sons performed to identify the source of difference in the control group, the difference was found to be significant in the comparison of mean anger score obtained after training to those obtained after follow-up, while no significant difference was found in other comparisons. The group and time interactions of mean anger scores were found to be significant (p< 0.001; Table 3). Table 3 presents mean scores of anger control, persistent anger, anger-in, anger-out subscales in the experiment and control groups.

Table 4 presents mean overall self-esteem scores of subjects in experiment and control groups obtained before and after training as well as those obtained after follow-up period. The group effect on mean overall self-esteem score was found to be significant (p< 0.001; Table 4). In the multiple comparisons performed to identify the source of difference in the

experiment group, mean overall self-esteem score obtained after follow-up period was found to be significantly lower compared to those obtained both before and after training (p< 0.001). In the multiple comparisons performed to identify the source of difference in the control group, no significant difference was found in mean overall self-esteem scores obtained after follow-up compared to those obtained both before and after training (p> 0.05; Table 4).

The group effect on mean overall Beck depression score was found to be significant (p< 0.001). The measurement/time effect on mean overall Beck depression score was found to be significant (p< 0.001; Table 5). In the multiple comparisons performed to identify the source of difference in the experiment group, mean overall Beck depression score obtained after follow-up period was found to be significantly lower compared to those obtained both before and after training (p< 0.001). In the multiple comparisons performed to identify the source of difference in the control group, the difference was found to be significant in the comparison of mean depression score obtained after training to those obtained after follow-up, while no significant difference was found in other comparisons (p< 0.05).

DISCUSSION

Phone and videotapes are known to be technologies commonly used in the education of patients. Phone interviews are an effective method to provide information and support to individuals and groups in cancers as well as several chronic diseases.[9-14,22] In several studies, they was found that, by this method, the level of knowledge is increased in patient receiving chemotherapy while symptoms related to chemotherapy are decreased.[12,23-25]

In our study, no significant difference was found between experiment and control groups regarding mean overall anger scores obtained before training (p> 0.05). In addition, no significant difference was found between mean overall anger scores obtained before and after training in experiment group (p> 0.05). In experiment group, it was found that there was a significant difference between mean overall anger scores obtained before and after training compared to those obtained after follow-up period (p< 0.001). In the control group, it was found that there was no significant difference in mean overall anger scores obtained before and after training compared

to those obtained after follow-up (p> 0.05); however, a significant difference was found between mean overall anger scores obtained after training and those obtained after follow-up (p< 0.05; Table 3). According to our results, it was seen that anger score was gradually decreased in patients in whom information and support was provided by phone interviews, while it continued to increase in the control group. In this context, our results were in agreement with those obtained by other groups. The previous studies demonstrated that patients receiving information and support can more conveniently cope with conditions causing psychological distress such as anger, hopelessness or ambiguousness.[8-10,13,14,22,26,27]

In the literature, it has been shown that there are some changes in the feeling of identity and ego; thus, there may be a decrease in self-esteem in patients with breast cancer.[4-7,12,28] In patients with breast cancer, it is thought that this could be due experiencing alterations in body image and self-esteem with changes in their body. Before training, no significant difference was found between experiment and control groups regarding mean self-esteem score (p> 0.05). In experiment group, it was found that there was a significant difference between mean self-esteem scores obtained before and after training as well as between those obtained before training and after follow-up period (p> 0.001). In control group, it was found that there was no significant difference between mean self-esteem scores obtained before and after training (p> 0.05), while there was a significant difference in those obtained before and after training compared to those obtained after follow-up period (p< 0.05; Table 4). Several studies are in agreement with our results.[9-14,29] Data obtained in our study can be interpreted as the phone interviews and anger management trainings have positive effects on self-esteem of the patients in experiment group. However, it was found that self-esteem could be reduce in control subjects who experienced routine practice and didn't receive any intervention.

It is well-known that anxiety and depression are the most common psychosocial problems experienced by patients with breast cancer. It is of importance to protect these patients from many psychological disorders, mainly from depression. As the depression is associated with anger directed to ego, the improvement of effective coping skills with anger is of importance in the prevention of depression. Previous

studies demonstrated that structured psychological training directed to patients with breast cancer and follow-up are effective in reducing depression levels in these patients.[3-8,10,28,30] In our study, no significant difference was found between experiment and control groups regarding mean Beck depression scores before training (p> 0.05). Moreover, no significant difference was found between mean Beck depression scores obtained before and after training in experiment group (p> 0.05). In experiment group, it was found there was a significant difference in mean Beck depression scores obtained before and after training compared to those obtained after follow-up period (p< 0.001). In control group, it was found there was no significant difference in mean Beck depression scores obtained before training compared to those obtained after training and after follow-up period (p> 0.05); however, a significant difference was observed in mean Beck depression scores obtained after training and follow-up period (p< 0.05; Table 5). According to our results, it is thought the depression is rather prevalent in patients receiving radiotherapy, while anger management training and follow-up by phone interviews are essential to reduce level of depression. It may be suggested that the level of depression continuously increased in controls during radiotherapy; thus, the patients managed with routine clinical practice at hospitals are associated with severe risk for depression.[9-14,22-26,31]

Limitations: This study has some limitations. While anger management training was planned as 2 sessions lasting 25 minutes in patients with breast cancer, some variations occurred in the number and duration of sessions due to individual characteristics of the patients and discussion on the questions asked by patients about their psychological status. The sample size was large enough to allow adequate statistical power to clearly determine the intervention's effectiveness.

CONCLUSIONS

It is recommended to provide home-based care (e.g. phone interviews, home visits) following anger management training in patients with breast cancers and to arrange education program in those receiving radiotherapy. It is also recommended to conduct studies with prolonged follow-up period to assess the effectiveness of follow-up provided to the patients with breast cancers by using phone interviews. Further studies using telepsychiatric follow-up methods other than phone interview such as e-mail or web-based follow-up in order to provide home-based follow-up to the patients are needed.

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Correspondence

Dr. Birgül ÖZKAN

Yıldırım Beyazıt Üniversitesi

Sağlık Bilimleri Fakültesi

Çankırı Cad. Çiçek Sokak, No: 3

Rektörlük Binası

Ulus / ANKARA

Tel: (+90.312) 324 15 55

e-mail: ozkanbirgul7@gmail.com