ORIGINAL PAPER

Are we Helpless in Lung Cancer? Discharge Program for Symptom Control: An Experimental Case-Control Study

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Abstract

Purpose: The purpose of the study was to establish the effectiveness of a discharge program on symptom control and quality of life in patients with lung cancer.
Research Approach and Settings: Experimental case-control study study. This study was conducted at Ege University, in İzmir, Turkey. Routine clinic patient care was administered to the control group whilst a discharge program was administered to the experimental group.
Methods: Karnofsky Performance Scale, LCSS, and the EORTC QLQ C-30 and LC-13 Quality Of Life Questionnaire were used in both groups three times in six weeks.
Results: A statistically significant difference was detected between the scores of fatigue, dyspnea, pain, role function, social function and, global quality of life in the repeated measures of the patients in the experimental groups ($p<.05$). A significant improvement was observed within a period of 6 weeks in quality of life and symptom severity levels of patients who had lung cancer and to whom a discharge program was applied.
Conclusions: It may be suggested that discharge planning is an effective tool for the care of patients with lung cancer.
Implications for Nursing: These results, which can provide a significant contribution to health professionals who discharge planning within the framework of a plan.
Knowledge Translation: In fact, this study does not provide a new invention to the nursing literature, but offers evidence that supporting previous studies about how important that positively influences of discharge education in group of patients with lung cancer.

Keywords: Lung cancer, Quality of life, End of Life, Nursing Research, Palliative Care

Introduction

With widespread screening studies, it was shown that early diagnosis as lung cancer was not possible and there was no change in mortality. Today, the prognoses of patients with lung cancer are still not good. Although much comprehensive research has been done on the subject and there is some progress, the survival duration has not yet reached desirable levels, and five-year survival is still between 5 and 10%. Lung cancer was the third most frequently diagnosed cancer (approximately 172 000 new cases) in the United States in 2002 and is the leading cause of cancer death in the United States and worldwide (Kutikova, Bowman, Chang, Long, Obasaju & Crown, 2005). It comprises 12.8% of cancer cases (one million new cases a year) and 17.8% cancer deaths (940 000 deaths a year) (Moore et al., 2010). According to the data given by the Ministry of Health in Turkey, lung cancer is the commonest cancer in men (32%) and the sixth commonest in women (4%) (Cancer Statistics in Turkey, 2012) (Turkish Association for Cancer Research and

Control). Kutikova et al. (2005) state that the monthly care cost of lung cancer for each patient is $6 181 and the two-year total cost until death is $42 990.

The low success level in cancer treatment in general is evident in lung cancer also. Even without providing a full cure, a patient should have a two-year survival duration with the highest possible quality of life. Care becomes increasingly important as life comes to an end, with the patient suffering from mortal and progressive illness and trying to cope with not only the physical symptoms of illness, but also with the "existential crisis" related to the approach of death. Though it is accepted in current medical literature as a necessary part of care to relieve pain and to reduce symptoms to an optimal level, we are not successful even in achieving that, so for example despite widely-accepted pain management guidelines, patients with lung cancer continue to suffer from not only pain, but also from other unpleasant symptoms and thoughts that these are their last days (Griffin, Nelson, Koch, Niell, Ackerman, Thompson & Cole, 2003). Patients with lung cancer undergo a number of different treatments which have similar therapeutic effects.

Unfortunately, for patients whose disease recurs after standard first-line platinum-based therapy, the expected survival is measured in months, even with the most aggressive therapies. Quality of life, survival, and tumor response are all interrelated parameters that are dependent on both the malignancy itself and the treatment strategies used to combat it. It is possible to attain health goals by ensuring continuity of care. Patients are taken into intensive care in the period following diagnosis in the hospital environment and are discharged from hospital after the routine procedures are completed. Patients discharged from hospital mostly do not have access to facilities for getting help in the home environment because the facilities for nursing at home are quite limited in Turkey. So, as is stated in the literature, a good and comprehensive discharge program can decrease the needs that patients feel in the home environment, and can give the patient's family the possibility of supplying the patient's needs themselves (Svobodnik et al., 2004; Fadiloglu, 2006).

The current nursing shortage has complicated the urgent need for more patient and family education for continuity of care after discharge because there are fewer nurses to attend to the patient before discharge. In one national staffing survey of 7300 nurses, 75 percent of the nurses surveyed reported that quality of care had declined, including patients being discharged without adequate information in order to continue their care. The problem of comprehensive discharge planning is exacerbated because financial concerns in the health care environment have for some time now created pressures to move patients swiftly through the acute care hospital setting to discharge. Simultaneously, increasingly complex and chronic patient conditions are requiring earlier and more intensive discharge planning to address the patients' ongoing care needs (Huber & McClelland, 2003). It was shown in this study that we need discharge programs that are structured for special patient groups and which have proven effectiveness. The aim of this study was to show how a discharge program applied to patients with lung cancer affects their quality of life and symptoms and to improve nursing application for that patient group as well.

One of the most interesting findings in quality of life studies of lung cancer patients is that initial quality of life was found to be the strongest prognostic factor for survival. In addition, creation of a supportive environment may help patients overcome their problems. Relatives, clinicians, social work departments, and cancer support groups all have an important role to play in this matter. Beyond these, the role of clinicians in recognizing symptoms and referring patients to appropriate care is crucial (Montazeri, Gillis & McEwen, 1998).

Aim of the study

In this study, the hypothesis was tested that discharge planning applied to the patients in the experimental group increases self-care strengths and symptom management abilities of patients, and so increases their quality of life.

Material and Methods

The procedure

The study was designed as an independent experimental- case control study with pre-post-test to investigate the effect of a discharge

program on quality of life and symptom control in individuals with lung cancer. The study was conducted in the Chest Diseases Clinic of Ege University Medical Faculty Research and Application Hospital in Izmir, Turkey between May 2006 and July 2007 after receiving permission from the ethics committee and research permission.

The sample group of the study consisted of a total of 32 patients with lung cancer (16 in the control group and 16 in the experimental group) who met the determined criteria and accepted to participate in the study. Patients in the control group were selected according to their gender, educational level and stage of disease, to match patients in the experimental group from among voluntary patients who were diagnosed with lung cancer, hospitalized in the chest diseases clinic, and met the inclusion criteria for the study.

The Lung Cancer Symptom Scale, Karnofsky Performance Scale and EORTC QLQ C-30 and LC-13 scales were applied to both groups without any interventions before discharge and were reapplied to both groups in the second and sixth weeks after the discharge, thus completing the data collection stage of the study.

During the study, patients in the control group were given routine clinical care, while patients in the experimental group were given routine clinical care and the planned discharge program. The applications that were performed on the experimental group within the scope of the discharge program included the distribution of a training manual and organization of a training meeting. Besides, the patients were given a phone number and told that they were free to call this number at all hours of every day whenever necessary. Each patient in the experimental group was called by the researcher at least once within the first three days after the interview. In addition to the standard discharge program that was prepared for patients in the experimental group, special interventions aimed at the patients' personal problems were included during the training after the extensive patient diagnosis which was performed as part of the data collection process. A training manual entitled "Guide for Patients with Lung Cancer and Their Families" was prepared to train the individuals with lung cancer (Korkmaz & Fadiloglu, 2013). Prepared under the guidance of an academic advisory group in the light of literature information, this manual included a definition of lung cancer, symptoms and findings of lung cancer, the diagnosis criteria of lung cancer and treatment objectives; important points considered throughout were the effects of drugs, drug side effects and usage of drugs; the importance of relaxation and exercise; frequent problems caused by lung cancer and their treatment, and suggestions for coping with the disease in daily life. The manual was distributed to all of the patients included in the study based on the fact that every patient has the right to obtain information about their disease. However, the patients in the control group received their manuals only after the final measurements in accordance with the study design. Patients in the control group were told to note down the questions they wanted to ask and the researchers tried to answer these questions after the final measurements. In addition, the telephone counseling service was extended to patients in the control group after the final measurement and sustained indefinitely. All of the subjects in the manual were applied to patients in the experimental group from hospitalization to discharge according to the discharge program, within the scope of the predetermined plan.

Measures and Survey Instruments

A Data Collection Form was given to individuals with lung cancer in order to determine the demographic features of patients, health diagnoses and system data regarding the disease; the Karnofsky Performance Scale (KPS) was given to define the state of efficiency, a Lung Cancer Symptom Scale (LCSS) was given to determine the level of symptom control, and the EORTC QLQ C-30 and LC-13 Lung Module version 3.0 was given scale to determine the patients' quality of life.

Data Collection Form: This intrument consisted of questions that include characteristics such as age, gender, educational status, marital status, income state, employment, stage of disease, familial cancer history, and treatment method.

Lung Cancer Symptom Scale: This scale was developed by Dr. Patricia Hollen et al. in 1995 as a special quality of life measurement instrument especially for clinical therapeutic usage (Hollen, Gralla, Kris, Eberly & Cox, 1999). The nine-item LCSS includes six questions and three summative questions about the major symptoms

of the patient regarding lung cancer. Symptoms include appetite, fatigue, cough, dyspnea, hemoptysis, and pain. Summarization includes symptomatic distress, the effect of the disease on activities, and global quality of life. Patients use nine visual analog scales that are given with questions written on separate cards. Each answer is marked on a horizontal line of 100 mm. The implementation of the scale lasts for only 3-5 minutes and it can be understood easily by the patients. In the published studies, LCSS was used for approximately 1000 patients with lung cancer. Studies conducted indicated the scale as a convenient method of analysis (Lutz et al., 1997). A study was conducted with 90 patients with lung cancer before the implementation of this scale in our study and a validity and reliability study for the Turkish version of the scale was performed by us (Cronbach-Alpha: 0.75). After this, the scale was used in the study.

Karnofsky Performance Scale: The KPS was developed by Karnofsky et al. in 1948 on patients with cancer. It is a measurement instrument that is frequently used by clinicians to evaluate the daily life activities of patients. Patients obtain scores between 0 and 100 according to their functional disabilities. While 100 indicates the best state of functional adequacy, 0 indicates that there is no functional adequacy (death) (McHorney, 1999).

EORTC QLQ C-30 (Version 3.0) and LC-13 Lung Module: The EORTC QLQ C-30 quality of life scale was developed by Aaronsson et al. in 1993, and is used to diagnose the quality of life of individuals diagnosed with cancer (Aaronson et al., 1993). It was adapted into Turkish by Güzelant et al. in 2004 and its validity and reliability for Turkish society were tested for patients with lung cancer. The Cronbach alpha coefficient of the scale was determined as ≥ 0.70. As a result of these studies, the scale was determined to be a valid and reliable instrument (Güzelant, 2004a).

The EORTC QLQ C-30 quality of life scale consists of 30 items and includes two parts, the functional subscale and the symptom subscale.

Functional Subscale: This consists of six dimensions: physical (questions 1-5), role (questions 6 and 7), cognitive (questions 20 and 25), emotional (questions 21-24), social function (questions 26 and 27) and global quality of life (questions 29 and 30) (Güzelant, 2004a). A high score obtained on the functional subscale signifies that the functional level is also high.

Symptom Subscale: This includes the symptoms of fatigue (questions 10, 12, and 18), nausea and vomiting (questions 14 and 15), pain (questions nine and 19), diarrhea (question 17) and financial effects (question 28) (14). A high score obtained from the symptom subscale signifies that the symptom severity is high.

LC-13 Quality of Life Scale: Rather than being used alone, this scale is used only in conjunction with the EORTC QLQ C-30 quality of life scale. This scale measures the frequent symptoms which are specific to lung cancer.

Statistical Analyses

The Statistical Package for Social Sciences 21.0 (SPSS) software program was used to analyze the data obtained from the study. Demographic and introductory information about patients was specified as numbers and percentages. Levene's test (test for homogeneity of variances) was performed in order to determine whether the patients in the experimental and control groups showed a similar distribution in terms of their demographic characteristics (Akgül, 1997). Differences between the scores regarding the patients in the experimental and control groups were evaluated by using variance analysis in repeated measurements.

Results

In this study, 56.3% of patients in the experimental group were younger than 60 and their average age was 58.2±8.1, while 34.4% of patients in the control group were younger than 60 and their average age was 55.6±7.5. Groups were equalized in terms of gender, with 75% of both groups male and 25% female. Groups were also equalized in terms of educational status with 37.3% primary school graduates, 31.3% secondary-high school graduates and 31.3% university graduates or higher. It was determined that the majority of patients (87.5%) in both groups were married. Only one patient in the experimental group (6.3%) and two patients in the control group (12.5%) still worked actively. Regarding income, 50% of patients in the experimental group had equal income and expenditure. In the control group, on the other

hand, 50% of patients had an income that was less than expenditure.

It was determined that 62.5% of patients had a diagnosis of non-small cell lung cancer, and 75% of patients in the experimental group and 56.3% of patients in the control group had been diagnosed with lung cancer less than a year previously. Regarding the stage of the disease, it was determined that the groups had an equal distribution, with 68.5% of patients in both groups in stage IV. Patients were also equal in terms of the treatment they were receiving, and 62.5% of each group consisted of patients who had had radiotherapy previously and were receiving chemotherapy at the time of the study. While 68.8% of patients in the experimental group scored 90 on the Karnofsky performance scale, only one patient scored 100. On the other hand, the same number of patients in the control group scored 90 (68.8%), but no patient scored 100 or 70 (Table 1).

It was determined from the first measurements performed using the LCSS that only the scores of the Effect of Disease on Activities and Global Life Quality showed a significant difference ($p<.05$). Also, the control group was in a better state at the beginning in terms of both scores. Lower values in all scores of the LCSS showed more positive levels. Table 2 illustrates collectively the distribution of LCSS subscale mean scores of patients according to measurement times. The difference between the first, second and sixth week measurements of the scores of patients in the experimental and control groups in terms of loss of appetite, fatigue, dyspnea, pain, effect of disease on activities, global quality of life and average symptom burden was statistically significant ($p<.05$). However, no significant difference was observed between the scores of cough, hemoptysis and symptomatic distress ($p>.05$).

An assessment was made regarding whether LCSS scores were affected by any socio-demographic characteristics, and it was determined that only scores of loss of appetite were affected by the patient's diagnosis, while other scores showed no significant difference based on any independent variable (Table 2).

High scores on functional subscales of the EORTC QLQ C-30 quality of life scale show a high state of well-being. Upon first measurements, it was found that only the scores of social function showed a significant difference ($U=69.50$, $p=.019$). This was in favor of the control group. Differences between groups in the first, second and sixth week measurements were assessed by analysis of variance in repeated measurements.

This analysis showed no statistically significant difference between the scores of physical, emotional and cognitive function ($p>.05$), but it was determined that the differences between the advanced measurements of the scores of role function, social function and global quality of life were statistically significant ($p<.05$) (Table 3).

Unlike the functional subscale, high scores on the symptom subscale of EORTC QLQ C-30 quality of life scale show a high symptom level. First measurements determined that none of the scores on the symptom subscale of the EORTC QLQ C-30 quality of life scale showed a significant difference ($p>.05$) (Table 3).

As well as the distribution of all scores of the symptom subscale, factors that might have affected these scores were evaluated with variance analyses in repeated measurements according to measurement times. No statistically significant difference was found between the ordered measurements of the scores of pain, dyspnea, sleep disorder, constipation and financial effect ($p>.05$). The differences between the first, second and sixth week measurements of the scores of fatigue, nausea-vomiting, loss of appetite, constipation, diarrhea, and financial effect were statistically significant (Table 3).

High scores on the symptom subscales of the EORTC QLQ C-30 LC-13 quality of life scale show a high symptom level. During first measurements, none the scores on the symptom subscale of LC-13 quality of life scale showed any statistically significant difference ($p>.05$). It was determined that the differences between successive measurements of the scores of dyspnea, cough, hemoptysis, neuropathy, alopecia, chest pain and arm-shoulder pain were not statistically significant ($p>.05$).

However, the differences between the first, second and sixth week measurements of the scores of throat ache, swallowing difficulty and pain in other areas were statistically significant ($p<.05$) (Table 3).

Table 1 : ***Distribution of Some of the Socio-Demographic and Disease Characteristics of the Patients***

Socio-Demographic Characteristics		Experimental Group		Control Group		Total		*p*
		n	%	*n*	%	*n*	%	
Age Group	Under the Age of 60	9	56.3	12	75.0	21	65.6	t= .330
	60 Years and Over	7	43.8	4	25.0	11	34.4	p> .05
Age	($\bar{x}$±Sd)		58.2±8.1		55.75±7.45			
Gender	Female	4	25.0	4	25.0	8	25.0	X^2=1.000
	Male	12	75.0	12	75.0	24	75.0	
Education	Primary-Literacy	6	37.5	6	37.5	12	37.5	X^2=1.000
	Middle-High School	5	31.3	5	31.3	10	31.3	
	College-University	5	31.3	5	31.3	10	31.3	
Marital Status	Married	14	87.5	14	87.5	28	87.5	X^2=1.000
	Single/Divorced	2	12.5	2	12.5	4	12.5	
Working Status	Does Not Work	15	93.8	14	87.5	29	90.6	X^2=0.541
	Working	1	6.3	2	12.5	3	9.4	
Income Status	Income Less Than Outgoings	7	43.8	8	50.0	15	46.9	X^2=0.710
	Income- Outgoings Equivalent	8	50.0	6	37.5	14	43.8	
	Income More Than Outgoings	1	6.3	2	12.5	3	9.4	
Profession	Worker-Officer	1	6.3	4	25.0	5	15.6	X^2=0.229
	Self-Employed	2	12.5	-	0.0	2	6.3	
	Retired	12	75.0	10	62.5	22	68.8	
	Housewife	1	6.3	2	12.5	3	9.4	
Diagnosis of Disease	SCLC	6	37.5	6	37.5	12	37.5	X^2=1.000
	NSCLC	10	62.5	10	62.5	20	62.5	
Diagnosis Time	Less Than 1 Year	12	75.0	9	56.3	21	65.6	X^2=0.523
	1-2 Years	2	12.5	3	18.8	5	15.6	
	Over 2 Years	2	12.5	4	25.0	6	18.8	
Stage of the disease	Stage III	5	31.3	5	31.3	10	31.3	X^2=1.000
	Stage IV	11	68.8	11	68.8	22	68.8	
Taken Treatment	Chemotherapy	6	37.3	6	37.3	12	37.3	X^2=1.000
	Chemotherapy + Radiotherapy	10	62.5	10	62.5	20	62.5	
Karnofsky Performance Status	100 Points	1	6.3	-	0.0	1	3.1	X^2=0.425
	90 Points	11	68.8	11	68.8	22	68.8	
	80 Points	3	18.8	5	31.3	8	25.0	
	70 Points	1	6.3	-	0.0	1	3.1	

Table 2 : ***Distribution of LCSS Means of Patients by Measuring Times.***

LCSS Subscales	First Measurement						Second Week				Sixth Week					
	Experimental Group		Control Group				Experimental Group		Control Group		Experimental Group		Control Group			
	$\bar{x}$	Sd	$\bar{x}$	Sd	U	p	$\bar{x}$	Sd	$\bar{x}$	Sd	$\bar{x}$	Sd	$\bar{x}$	Sd	F	p
Anorexia	29.3	24.1	28.8	28.8	1165	.664	24.8	21.8	35.8	25.8	19.9	21.1	43.2	18.0	5.92	.022
Fatigue	40.5	24.5	33.8	20.9	1100	.497	34.1	20.6	49.7	26.9	33.3	23.8	56.3	18.9	7.844	.010
Cough	28.6	28.5	22.3	17.2	1270	.970	20.2	20.4	28.5	24.3	24.7	26.1	34.5	27.5	4.01	.056
Dyspnea	34.6	35.1	20.3	17.5	1200	.762	26.9	27.2	24.0	18.4	27.2	30.4	33.7	25.3	6.147	.020
Hemoptysis	0.0	0.0	0.9	3.0	1120	.151	0.8	3.0	2.4	4.5	0.8	2.2	1.3	3.4	0.29	.592
Pain	17.6	28.3	19.3	23.0	1045	.368	11.3	19.2	31.9	26.3	14.5	19.0	33.4	23.2	5.50	.028
Symptomatic Distress	33.7	25.1	27.4	25.9	1125	.559	24.0	17.8	36.2	22.8	28.3	23.2	40.9	20.5	3.271	.086
Influence of Disease on Activities	50.0	24.8	30.5	26.2	75.5	.048	39.8	21.6	37.4	22.4	37.7	25.5	49.0	18.3	9.924	.005
Global Quality of Life	55.1	15.5	39.2	25.1	74.5	.044	49.1	22.3	55.4	18.3	43.7	22.3	63.4	15.1	13.671	.002
Average Symptom Burden Score	30.1	20.3	24.9	13.6	1195	.749	23.5	16.5	34.0	18.1	23.9	17.5	40.2	16.4	10.470	.004

Table 3: ***Distribution of EORTC QLQ C-30 and LC 13 Quality of Life Subscale Score Means of Patients According to Measurement Times.***

	EORTC QLQ C-30	First Measurement						Second Week				Sixth Week				Statistics	
		Experimental Group (n: 16)		Control Group (n: 16)		U	P	Experimental Group (n: 16)		Control Group (n: 16)		Experimental group (n: 16)		Control Group (n: 16)		F	P
		$\bar{x}$	Sd	$\bar{x}$	Sd			$\bar{x}$	Sd	$\bar{x}$	Sd	$\bar{x}$	Sd		Sd		
Functional Sub dimensions	Physical Function	54.2	20.4	66.7	14.6	84.5	.095	61.3	21.7	72.5	24.1	62.9	21.8	68.8	25.0	0.8	.380
	Role Function	64.6	37.5	81.3	18.1	104.5	.360	65.7	31.9	63.5	32.3	63.5	30.0	49.0	25.4	10.2	.005
	Emotional Function	86.3	19.7	87.5	13.7	126.5	.954	83.3	15.4	82.5	20.1	87.1	13.7	81.7	20.2	1.8	.199
	Cognitive Function	89.6	14.8	89.6	18.1	118.0	.662	86.5	17.5	90.6	14.9	85.4	17.1	91.7	14.9	0.5	.502
	Social Function	72.9	23.5	90.6	13.6	69.5	.019	71.9	29.0	78.1	15.8	71.9	27.0	65.6	24.7	13.2	.002
	Global QL	59.4	14.6	64.6	20.3	105.5	.375	69.8	14.2	51.6	16.7	66.7	22.4	42.2	16.5	15.8	.001
Symptom sub dimension	Fatigue	50.7	27.2	35.4	30.7	87.0	.118	39.6	22.2	46.5	27.0	34.7	22.6	52.8	23.8	15.8	.001
	Nausea-Vomiting	11.5	27.0	18.8	31.6	110.5	.421	8.3	16.1	31.3	37.0	12.5	23.2	39.6	31.0	7.8	.012
	Pain	30.2	31.2	35.4	36.5	118.5	.714	18.8	24.3	43.8	31.6	27.1	22.7	50.0	21.9	3.1	.094
	Dyspnea	39.6	42.6	25.0	28.6	106.0	.376	22.9	33.8	29.2	26.9	31.3	35.4	27.1	25.0	0.7	.418
	Sleeplessness	22.9	41.7	18.8	36.5	125.5	.901	10.4	20.1	37.5	36.3	20.8	29.5	50.0	29.8	3.9	.064
	Anorexia	31.3	41.2	27.1	44.3	117.5	.647	18.8	27.1	37.5	41.9	27.1	32.7	50.0	38.5	5.8	.023
	Constipation	8.3	14.9	14.6	29.7	124.0	.842	12.5	16.7	18.8	32.1	10.4	16.0	29.2	36.3	2.4	.140
	Diarrhea	18.8	29.7	8.3	19.3	103.5	.242	10.4	26.4	31.3	33.3	00.0	00.0	43.8	31.6	20.8	.000
	Fiscal Impact	31.3	31.0	43.8	35.9	102.0	.306	43.8	29.1	31.3	35.4	41.7	35.5	39.6	34.9	2.3	.150
LC-13	Dyspnea	36.1	26.1	25.7	22.1	98.5	.259	11.8	10.3	13.9	12.5	29.9	24.6	32.6	22.4	3.1	.096
	Cough	37.5	40.1	37.5	31.9	122.0	.813	29.1	20.6	29.2	26.9	35.4	28.5	29.2	26.9	0.4	.545
	Hemoptysis	4.2	16.7	2.1	8.3	127.5	.964	00.0	00.0	6.3	13.4	00.0	00.0	6.3	13.4	4.2	.055
	Sore Throat	4.2	16.7	6.3	18.1	120.5	.576	2.1	8.3	20.9	29.5	4.2	11.4	22.9	29.1	5.2	.035
	Difficulty in Swallowing	8.3	14.9	16.7	32.2	122.0	.765	4.2	11.4	29.2	36.3	10.4	20.1	31.3	33.3	5.7	.027
	Neuropathy	8.3	14.9	16.7	29.8	116.0	.565	10.4	16.0	22.9	31.6	20.8	24.0	16.7	24.3	1.8	.193
	Alopecia	25.0	41.3	37.5	41.9	101.0	.258	27.1	37.0	50.0	47.1	33.3	38.5	56.3	48.3	0.5	.475
	Chest pain	18.8	24.3	22.9	26.4	116.5	.630	18.8	29.7	31.3	25.7	12.5	20.6	41.7	25.8	3.2	.089
	Shoulder And Arm Pain	22.9	31.6	22.9	29.1	124.5	.884	14.6	21.0	29.2	31.9	16.7	24.3	33.3	34.4	1.4	.249
	Pain in Other Parts	25.0	31.0	22.9	23.5	126.5	.951	16.7	24.3	31.3	31.0	8.3	14.9	33.3	29.8	9.0	.007

Table 4 : ***Normative Data Determined by Hollen, Gralla et al.***

	Baseline Data		on 29th day		on 71st day	
Scores	$\bar{x}$	Sd	$\bar{x}$	Sd	$\bar{x}$	Sd
Anorexia	23.72	31.04	27.99	30.02	26.63	28.58
Fatigue	40.45	30.80	43.24	29.07	39.53	27.28
Cough	31.67	31.51	19.82	23.13	21.11	24.79
Dyspnea	35.65	33.67	28.70	27.48	31.76	26.83
Hemoptysis	3.87	12.14	2.43	8.11	2.33	5.93
Pain	21.28	25.44	20.96	23.02	19.00	23.01
Symptomatic Distress	35.59	30.74	29.20	25.59	27.14	24.34
Effect of Disease on Activities	37.45	30.59	36.54	28.47	34.48	24.43
Global Quality of Life	31.02	30.66	33.54	28.60	31.59	26.27
Average Symptom Burden Score	28.77	18.06	27.26	16.95	25.97	16.50

Table 5 : ***Distribution of Average LCSS Sub Dimensions Scores According to Measurement Times.***

	First Measurement				Second Week				Sixth Week			
LCSS sub dimensions	Experimental Group (n: 16)		Control Group (n:16)		Experimental Group (n: 16)		Control Group (n:16)		Experimental Group (n:16)		Control Group (n:16)	
	$\bar{x}$	Sd	$\bar{x}$	Sd	$\bar{x}$	Sd	$\bar{x}$	Sd	$\bar{x}$	Sd	$\bar{x}$	Sd
Anorexia	29.3	24.1	28.8	28.8	24.8	21.8	35.8	25.8	19.9	21.1	43.2	18.0
Fatigue	40.5	24.5	33.8	20.9	34.1	20.6	49.7	26.9	33.3	23.8	56.3	18.9
Cough	28.6	28.5	22.3	17.2	20.2	20.4	28.5	24.3	24.7	26.1	34.5	27.5
Dyspnea	34.6	35.1	20.3	17.5	26.9	27.2	24.0	18.4	27.2	30.4	33.7	25.3
Hemoptysis	0.0	0.0	0.9	3.0	0.8	3.0	2.4	4.5	0.8	2.2	1.3	3.4
Pain	17.6	28.3	19.3	23.0	11.3	19.2	31.9	26.3	14.5	19.0	33.4	23.2
Symptomatic Distress	33.7	25.1	27.4	25.9	24.0	17.8	36.2	22.8	28.3	23.2	40.9	20.5
Effect of Disease on Activities	50.0	24.8	30.5	26.2	39.8	21.6	37.4	22.4	37.7	25.5	49.0	18.3
Global QL	55.1	15.5	39.2	25.1	49.1	22.3	55.4	18.3	43.7	22.3	63.4	15.1
Average Symptom Burden Score	30.1	20.3	24.9	13.6	23.5	16.5	34.0	18.1	23.9	17.5	40.2	16.4

Table 6: ***Comparison of Our Results with the Literature.***

EORTC QLQ C-30 and LC-13 scale Scores		Nicklasson et al. (n=101)		Fayers et al. (n=794)		Chie et al. (n=51)		Urdaniz et al. (First Measurements-n=170)[a]		Montazeri et al. (n=35)		Our Results (First Measurement Together Two Groups) n=32	
		$\bar{x}$	*Sd*	NSCLC	SCLC	$\bar{x}$	*Sd*	$\bar{x}$	*Sd*	$\bar{x}$	*Se*[b]	$\bar{x}$	*Sd*
Global Quality of Life		50.1	23.3	60.9	60.3	56.1	19.6	60.4	19.8	56.9	3.3	62.0	17.6
Function Scores[c]	52.9	32.3	66.8	58.8	79.9	18.3	78.5	24.3	74.3	3.7	60.4	18.5	18.54
	46.6	37.1	67.1	63.6	71.6	25.9	70.5	30.6	72.8	5.9	72.9	30.2	30.16
	72.6	24.0	69.8	65.7	75.8	16.1	72.5	21.6	80.0	78.2	86.9	16.7	16.72
	77.2	23.3	84.1	78.7	80.4	18.8	91.1	15.4	85.2	3.4	89.6	16.3	16.26
	65.2	34.6	75.3	69.3	69.3	28.4	86.9	19.1	86.6	3.9	81.8	20.9	20.89
Symptom Scores[d]	46.4	28.4	39.2	47.3	20.3	18.3	17.7	26.5	-	-	32.3	36.4	36.40
	34.2	32.2	28.4	31.0	24.8	24.8	19.0	23.9	-	-	32.8	33.5	33.46
	52.6	25.4	39.2	46.2	39.2	21.6	27.1	22.9	26.0	4.2	43.1	29.6	29.57
	29.8	32.7	32.0	40.1	-	-	31.6	35.6	27.6	5.7	20.8	38.6	38.57
	27.7	34.6	30.2	36.8	-	-	26.2	34.6	22.8	4.5	29.2	42.1	42.12
	14.4	23.4	10.0	10.9	17.6	21.7	4.9	13.7	7.6	2.3	15.1	29.1	29.13
	22.9	32.3	18.5	24.6	-	-	14.9	26.8	-	-	11.5	23.4	23.36
	13.7	24.3	5.0	7.1	-	-	4.2	13.7	-	-	13.5	25.2	25.20
	16.7	29.3	11.4	13.0	-	-	4.0	14.5	6.6	3.0	37.5	33.6	33.60
Lc-13 Scores		n=112		Mixed Lung Cancer Patients, the Reference Data n=346									
Dyspnea		39.0	32.2	44.3		-	-	36.7	27.9	44.7	5.8	37.5	35.7
Cough		2.7	10.1	8.7		-	-	8.2	18.5	9.5	3.7	3.1	13.0
Hemoptysis		35.6	23.2	34.0		-	-	22.5	23.0	27.8	4.6	30.9	24.4
Sore throat		7.4	20.9	-		-	-	3.6	12.7	-	-	5.2	17.2
Difficulty in Swallowing		8.9	21.0	-		-	-	5.8	15.9	-	-	12.5	25.0
Neuropathy		15.2	25.7	-		-	-	9.8	20.1	3.8	3.0	12.5	23.6
Alopecia		5.4	20.4	-		-	-	5.0	17.0			31.3	41.4
Chest pain		24.1	29.1	25.5		-	-	The average pain score[a]		16.2	4.2	20.8	25.0
Shoulder and Arm Pain		21	30.1	20.1		-	-	12.97	15.17	17.1	4.6	22.9	29.9
Pain in Other Parts		29.9	33.3	20.1		-	-	-	-	25.7	5.1	24.0	27.1

[a]: Urdaniz and his colleagues given an average score of pain. [b]: Montezeri and his colleagues used the standard error values. [c]: Higher functional dimensions scores means higher functional well-being. [d]: Higher symptom dimensions scores means higher symptom severity

Discussion

In spite of long-term and extensive literature reviews, no study was found assessing life qualities of patients using the LCSS scale after the application of a discharge program involving comprehensive patient training and consultancy. Thus, there was not sufficient data to compare and discuss the results. In a study by Svobodnik et al., the insufficiency of data regarding the LCSS was also emphasized, and the results of a study conducted by Hollen, Gralla et al. were used to compare the data obtained.[15] Since the literature is limited regarding LCSS scores, this study was also based on the same data.

In a study titled Normative data and trends in quality of life from the LCSS, Hollen, Gralla et al. used the LCSS scale to evaluate the quality of life scores of a patient diagnosed with 673 NSCLC at the beginning, and on the 29th and 71st days (Hollen, et al., 1999). Data obtained from this study was used as the basic data during the comparisons (Table 4).

Even though our study is smaller than the study of Hollen et al., (1999) in terms of sample size, it can be seen that the results of our control group in particular show a considerable similarity to theirs. Only the scores obtained by our experimental group from effect of disease on normal activities and global quality of life were determined to be higher than the normative data. We have previously stated that the data measured in the beginning showed a significant difference from the control group and thus the control group was in a better state in the beginning. Besides, considering the fact that Hollen et al. gave no treatment to patients in their study, it is to be noted that we also gave no application to the control group. This is an important indicator of the fact that the discharge program applied was efficient and that our data reflect objective results (Table 5).

Hollen et al. examined the relationship between various socio-demographic and clinical characteristics and LCSS scores and determined no significant difference regarding age, gender or race. They stated that the mean symptom burden of patients in stage III (23.1±15.5) was significantly lower than the mean symptom burden of patients in stage IV (27.0±16.0) and there was no significant difference in terms of other scores (Hollen, et al., 1999). In our measurements, we stated that the scores of patients on loss of appetite were affected by the histopathological type of their diagnoses, in terms of socio-demographic and clinical characteristics. In this respect, our results are different from the results of Hollen et al., only in terms of the scores of loss of appetite. However, our study designs were different.

In a study that included a large sample of 650 patients, Svobodnik et al., (2004) followed patients with lung cancer for a period from six months to four years. The purpose of this study was to determine how the quality of life of patients with lung cancer changed as a result of various socio-demographic and clinical characteristics. As a result of the study, the researchers stated that the total symptom score of patients diagnosed with Stage III-IV NSCLC was 27.4±17.2. They examined the relationship between mean symptom burden and gender, weight loss, marital status, histological type and stage of disease, and determined that scores of loss of appetite, cough and hemoptysis were statistically significantly lower in older patients. They also determined that the quality of life scores of women were better than the scores of cough, dyspnea, symptomatic distress, effect of disease on activities and global quality of life (Svobodnik, et al., 2004). No significant difference was observed on any scores regarding age and gender in our study. No score, except for the loss of appetite, was affected by independent variables and the score of loss of appetite was only affected by the histological type of the disease (NSCLC). Evaluating the results of the study by Svobodnik et al. in terms of the relation of scores to socio-demographic and clinical characteristics, they do not show similarity to our study.

Svobodnik et al., (2004) found out that quality of life scores that were measured in different periods after the diagnosis of lung cancer had a high-level relation to principal prognostic factors in the beginning. These prognostic factors were indicated to be the stage and histology of the disease, as well as the Karnofsky performance status, weight loss and gender (Svobodnik, et al., 2004). Kaasa and Mastekaasa (1988) determined a significant relation between the symptoms of the disease and the psychological well-being of patients in the group diagnosed with NSCLC. However, they stated that there was no

correlation between the side effects of the treatment and psychological well-being (Kaasa and Mastekaasa, 1988). Wolf et al., stated that there was a relation between the tumor response and quality of life in patients with NSCLC (Wolf, et al., 1991). Fernandez et al., (1989) observed a recovery on symptoms after the tumor response. In a study by Langendijk et al., it was observed that dyspnea and social function increased considerably with the objective tumor response (Langendijk, et al., 2000). Finkelstein et al., (1988) reported that quality of life scores were higher in men, but the scores showed no significant difference based on race or educational or marital status. Montazeri et al., (2003) stated that the quality of life before the diagnosis was important and independent from prognostic factors in patients with lung cancer. In addition to this, Herndon et al., (1999) stated that the only determinant of the compliance with clinical factors was pain. It is possible to evaluate the results of these studies only in terms of the effect of socio-demographic and clinical characteristics on LCSS scores. From this aspect, it is observed that scores are affected by a number of independent variables. Our study, on the other hand, examined whether the repeated measurements of independent variables such as age, gender, educational status, marital status, employment, income state, and job, as well as the diagnosis (histological type), stage and duration of the disease and LCSS scores showed a significant difference, and determined that no score, except for the scores of loss of appetite, was affected by independent variables.

Thus, the literature involves no study on which the LCSS was used after the intervention of a discharge program or patient training and the results of these interventions were evaluated. Studies conducted compared LCSS scores and independent variables of patients and revealed that there are statistically significant relations in most of them. Since the literature lacks studies that evaluate the effects of similar designs and interventions, we did not discuss our study results from this aspect. In this respect, we think that our data may be used in future studies.

Our results show that the discharge program makes a very positive development in the LCSS scores of a majority of patients. During treatment and the six week follow-up period, patients with stage III-IV lung cancer face intensive symptoms and side effects of the treatment. Our study precisely comprises this period. Thus, we think that the service of training and consultancy that was received especially by the experimental group regarding symptom management made a very positive contribution to their quality of life and symptom management.

First measurements between groups determined that only the scores of social function showed a significant difference (U=69.5; p=.019). While scores obtained by patients in the control group from social function were 90.6±13.6 in the first measurements, those of patients in the experimental group were 72.9±23.4. It was determined that the score of social function was in favor of the control group in the beginning. The difference between them was statistically significant (U=69.5; p=.019).

Evaluating the difference between groups in terms of scores that were obtained in advancing measurements, it was found that the scores of role function, social function and global quality of life showed a statistically significant difference (p<.05). It was also determined that the scores of physical function, emotional function and cognitive function did not show a significant difference. None of the scores of the functional subscale were affected by any independent variable to a statistically significant level (p>.05).

None of scores of the symptom subscale of the EORTC QLQ C-30 quality of life scale showed a statistically significant difference in either group (p>.05).

It was determined that scores of fatigue, nausea-vomiting, loss of appetite and diarrhea, which were among the scores of the symptom subscale of EORTC QLQ C-30 quality of life scale, showed a statistically significant variation between groups (p<.05). On the other hand, no statistically significant difference was determined in scores of pain, dyspnea, sleep disorder, constipation and financial effect in repeated measurements. Examining the effect of independent variables, it was determined that only the score of loss of appetite was affected by the treatment of patients. It was determined that the other scores were not affected to a statistically significant level (p>.05) by any independent variable.

None of the scores of the Symptom Subscale of the LC-13 quality of life scale showed a statistically significant difference from the first measurements made in the experimental and control groups in the beginning (p>.05).

Examining the differences between groups and the effect of independent variables, it was found that scores of throat pain, swallowing difficulty and pain in other areas showed a statistically significant difference in repeated measurements. No statistically significant difference was determined between the scores of dyspnea, cough, hemoptysis, neuropathy, alopecia, chest pain and arm-shoulder pain, which were among the other scores of the subscale, in repeated measurements. Examination of the independent variables affecting the scores showed that only the scores of alopecia were affected by the diagnosis of patients. None of the scores of other subscales showed a statistically significant difference based on independent variables.

In the literature review, we encountered no study that evaluated the effect of the discharge program on the quality of life of patients using the EORTC QLQ C30 and LC-13 scale. However, the EORTC QLQ C30 and LC-13 scale was commonly used in evaluating the quality of life of patients with lung cancer.

Nicklasson and Bergman evaluated the quality of life of 101 patients who had been diagnosed with lung cancer and were receiving palliative care (Nicklasson & Bergman, 2007). Fayers, Weeden and Curran, (1998) carried out a study with an extensive sample group consisting of 476 patients with lung cancer for EORTC QLQ C-30 and 346 patients with lung cancer for LC-13 in order to determine the reference values in terms of the EORTC QLQ C-30 and LC-13 scale (Fayers, et al., 1998). Chie, Yang, Hsu & Yang, (2004) conducted the validity and reliability of the Chinese version of the EORTC QLQ C-30 and LC-13 scale on a sample group consisting of 170 patients. Urdaniz et al., (2005) used the same scale on a sample group consisting of 170 patients and evaluated the quality of life of patients with lung cancer living in Spain three times, first during the treatment and the other two times after the treatment. Montazeri et al., (2001) evaluated the quality of life of patients with lung cancer regarding whether it was affected by socio-economic conditions. The comparison of the results of these five studies and our own results is as follows.

As is seen in table six, our scores of global quality of life were only higher than the results of Nicklasson and Bergman, (2007) and similar to the results of four other studies. It showed a very important similarity, especially to the reference data (Fayers: 60.9 for the NSCLC group–60.3 for the SCLC group) (Nicklasson & Bergman, 2007; Fayers et al., 1998).

Comparing in terms of scores of functional subscale, it was determined that our scores of physical function were higher than the results of Nicklasson and Bergman, (2007) lower than the results of Chie et al., (2004) Urdaniz et al., (2005) and Montazeri et al., (2003) but showed similarity to the results of the study by Fayers et al., (1998) which had the largest sample group and has been used as the reference data by a number of studies in the literature (66.8 for NSCLC-58.8 for SCLC).

Our scores of role function are higher than the scores of Nicklasson and Bergman, (2007) and similar to the results of four other studies.

Our scores of emotional function involve the highest values in the group (86.9±16.7) and it is seen that values become similar when the standard deviation is taken into consideration. Considering the results of five other studies, it is seen that our scores of cognitive function have an average state and show similarity to other studies (Nicklasson and Bergman, (2007; Fayers et al., 1998; Chie et al., 2004; Urdaniz et al., 2005; Montazeri et al., 2001). Our scores of social function are similar to the reference data results of Urdaniz et al., (2005) Montazeri et al., (2001) and are higher than the results of Nicklasson and Bergman, (2007) and Chie et al., (2004).

Comparing our scores of symptom subscale, it was determined that they showed a significant similarity to results that have been published in the literature. Only the scores of financial effect were higher than the results of other study groups. This condition was thought to be caused by the fact that our country has a lower level of income than other societies and our health system does not provide the majority of products, especially the products of patient care.

Comparing in terms of LC-13 scores, it was determined that all other scores, except for the

scores of alopecia, showed a significant similarity to the results of five studies specified in the table. We think that the reason for the scores of alopecia being distinctly higher is the fact that our study, which was completed within the first six weeks following the treatment and discharge, coincided with the period of alopecia development in patients. That is, the alopecia scores of patients were reflected on the scales due to the study schedule we planned. On the other hand, the reason behind why other studies had lower alopecia values might be the fact that they were extended in terms of duration and had broader samples.

In a general sense, we determined at the end of the study that results obtained through the EORTC QLQ C-30 and LC-13 quality of life scale were in line with the literature in many areas. However, we could not discuss either the effect of discharge, which involved extensive training programs, or differences between the measurements times, or the effect of independent variables on changes in this process. Having failed to discuss these areas brings an important aspect of this study into forefront, namely that there is no study in the literature that is similar to our study design. Our study is important, since it presents the first data which can be used in similar studies in the future. As we stated earlier, it is quite remarkable that even though we had a small numerical sample, we obtained results which were closer and more similar to the extensive-sample reference data of Fayers et al. than to four other studies (Montazeri et al., 2003; Nicklasson & Bergman, 2007; Chie et al., 2004; Urdaniz et al., 2005; Montazeri, et.al., 2001).

Evaluations performed with both LCSS and EORTC QLQ C-30 and LC-13 scales and the results obtained show that very important developments have been provided in many areas of life quality, as well as the severity and thus control of frequent symptoms. In this study's hypothesis that the discharge program applied increases the quality of life and symptom management of patients was accepted. In line with the results and findings obtained from this study, which was conducted to determine the effect of the discharge program on the quality of life and symptom management in patients with lung cancer, it was determined that the discharge program affected the symptom management and quality of life positively.

Conclusion

In accordance with the results obtained from the study, it was recommended that the discharge program should be applied to patients with lung cancer, the instruments used by patients with lung cancer and their families within the scope of the discharge program (such as a training manual) should be improved, a unit that could be called on by patients any time to provide them with information should be established, the healthcare professionals who work in the unit should be trained in order to improve the symptom management information of patients, nurses should be assigned to implement the discharge program and these nurses should be enabled to guide the patient/family and other healthcare personnel in patient care, the discharge program applied to patients with lung cancer should be repeated with broader samples, and similar studies should be applied to broader patient groups.

Acknowledgements: The study was conducted in the Chest Diseases Clinic of Ege University Medical Faculty Research and Application Hospital in Izmir, Turkey, between May 2006 and July 2007 after receiving permission from the ethics committee and research permission.

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