Turkish Journal of Geriatrics
2014; 17 (2) 164-171

Ezgi MUTLUAY[1]
Sabire YURTSEVER[2]

RESEARCH

CHRONIC PAIN AND ANXIETY IN GERIATRIC CANCER PATIENTS

ABSTRACT

Introduction: This paper aims to determine the chronic pain and anxiety of geriatric cancer patients.

Materials and Method: This was a descriptive study of 106 patients aged 65 or over who had been diagnosed with cancer. Study data were collected using a Personal Information Form, the McGill Pain Questionnaire to define pain characteristics, and the State-Trait Anxiety Inventory.

Results: Average patient age was 70.16, 79.2% being between 65 and 74; 54.7% were male; 55.7% were literate or had finished elementary school; 63.2% lived with their spouses. Pain medication was used by 90.6%, while all patients reported that their pain did affect their activities of daily living. The pain level was found to be significantly higher in patients who experienced vomiting due to chemotherapy or radiation therapy frequently or occasionally, and in patients who reported that feeding, mobility, eating, housekeeping/gardening and sleeping among their activities of daily living were severely affected ($p<0.05$). State-Trait Anxiety Inventory scores were higher in patients who experienced anorexia or diarrhea/constipation frequently, those who experienced continuous pain during the day, and those who reported their feeding, mobility, housekeeping/gardening activities of daily living to be severely affected ($p<0.05$). A positive correlation was found between the frequency of pain and the patients' trait anxiety levels ($p<0.01$).

Conclusion: A negative influence of pain on the activities of daily living and anxiety level of the elderly was established; the anxiety level increased in parallel with the pain.

Key Words: Geriatrics; Cancer; Chronic Pain; Anxiety.

ARAŞTIRMA

GERİATRİK KANSER HASTALARINDA KRONİK AĞRI VE KAYGI

ÖZ

Giriş: Bu çalışmanın amacı geriatrik kanser hastalarında kronik ağrı ve kaygı durumlarının belirlenmesidir.

Gereç ve Yöntem: Araştırma, tanımlayıcı nitelikte olup, araştırma kapsamına kanseri tanısı alan 65 yaş ve üzeri 106 hasta alınmıştır. Araştırmanın verileri, hastaların tanıtıcı bilgilerini içeren "Kişisel Bilgi Formu", hastaların ağrı özelliklerini belirlemek amacıyla "McGill Ağrı Soru Formu" ve hastaların kaygı düzeylerini belirlemek amacıyla "Durumluk ve Sürekli Kaygı Envanteri" kullanılarak toplanmıştır.

Bulgular: Çalışma kapsamına alınan hastaların yaş ortalamaları 70,16 olup, %79,2'si 65-74 yaş arasında idi. Hastaların %54,7'si erkek, %55,7'si okuryazar/ilköğretim mezunu ve %63,2'si eşi ile birlikte yaşamakta idi. Hastaların %90,6'sının ağrı tedavisi aldığı ve hastaların tümü deneyimledikleri ağrının günlük yaşam aktivitelerini etkilediğini belirtmişlerdir. Hastalık süresi beş yıldan fazla olan, kemoterapi/radyoterapi nedeni ile "sık sık" ya da "bazen" bulantı-kusma yaşayan, Günlük Yaşam Aktivitelerinden beslenme, hareket, yemek, ev / bahçe işleri ve uyku aktivitelerinin "çok" etkilendiğini belirten hastaların ağrı düzeylerinin daha yüksek olduğu saptanmıştır ($p<0,05$). Araştırmada "sık sık" iştahsızlık ve "sık sık" diyare-konstipasyon yaşayan, gün içinde "sürekli" ağrı deneyimleyen, ağrı nedeniyle Günlük Yaşam Aktivitelerinden beslenme, hareket, ev / bahçe işleri aktivitelerinin "çok" etkilendiğini ifade eden hastaların Durumluk ve Sürekli Kaygı Envanteri ölçek puan ortalamaları daha yüksek bulunmuştur ($p<0,05$). Hastaların ağrı sıklıkları ile durumluk sürekli kaygı düzeyleri arasında pozitif yönde anlamlı bir ilişki olduğu saptanmıştır ($p<0,01$).

Sonuç: Yaşanılan ağrının yaşlıların günlük yaşam aktivitelerini ve kaygı düzeylerini olumsuz yönde etkilediği, ağrı düzeyi arttıkça anksiyete düzeyinin arttığı belirlenmiştir.

Anahtar Sözcükler: Geriatrik; Kanser; Kronik Ağrı, Anksiyete.

İletişim *(Correspondance)*

Ezgi MUTLUAY
Hacettepe Üniversitesi, Hemşirelik Fakültesi ANKARA

Tlf: 0530 382 72 69
e-posta: ezgimutluayezgi@hotmail.com

Geliş Tarihi: 30/12/2013
(Received)

Kabul Tarihi: 05/03/2014
(Accepted)

[1] Hacettepe Üniversitesi, Hemşirelik Fakültesi ANKARA
[2] Mersin Üniversitesi, Sağlık Yüksekokulu MERSİN

Introduction

A diagnosis of cancer affects the individual from the biopsychosocial viewpoint, leading to a number of disturbing symptoms, the principal among them being pain and anxiety. Continuous, refractory or untreated cancer pain may negatively affect every aspect of the patient's life (1). Pain, the most widely experienced symptom among cancer patients, may negatively influence the individual's ADL and quality of life. Defining the incidence of pain is difficult due to its being a subjective complaint. Taking into account all types and stages of cancer, the incidence of cancer pain is reported to be between 40 and 80% (2, 3). Prevalence rates for pain were reported as 28% in recently diagnosed cancer patients, 50-70% in those actively given cancer therapy, and 64-80% among patients with advanced-stage cancer (4). Studies have shown pain to be particularly frequent among elderly cancer patients (5-7). Pain also adversely affects the ADL of elderly cancer patients (8). One study has indicated that pain negatively affected movement in 69.1%, sleep habits in 63.6%, nutrition in 27.3% of elderly patients (9).

The cognitive components of pain include the importance attributed by the individual to the disease symptoms, believing that it will be impossible to control the pain, and the anxiety in the course of the disease (10). The cancer diagnosis is the most important source of anxiety for patients, due to the life-threatening, chronic and lethal character of the disease, in addition to its being a major problem that elicits emotional, mental and behavioral reactions (11,12). In elderly patients with cancer, the appearance of regression and insufficiencies in biological, physiological and psychological processes, the loss of professional efficiency, and the increased dependency for one's ADL are additional anxiety factors that reduce the patients' quality of life by affecting their anxiety level and psychological condition (8,13). Anxiety incidence is reported to be more than 50%, chronic anxiety being present in about 30% of cancer patients (14).

Cancer may cause emotional distress and negative thoughts. Pain may also be considered a harbinger of situations such everything going wrong, that the disease is not responding to treatment or of approaching death. Thus, the anxiety seen in most cancer patients is a factor further intensifying cancer pain (15). Studies have shown the experience of pain to be particularly frequent among elderly cancer patients (5-7,16), who according to other reports frequently experience anxiety (5,17-19).

Among cancer patients, especially the elderly, pain negatively affects the individual's life, causing fear, anger and anxiety. It is hypothesized that the individual patient's fear and anxiety may be reduced by controlling pain. Control of pain therefore assumes a major significance in maintaining physiological, psychological and spiritual well-being and improving quality of life. Defining and evaluating pain and anxiety levels in the aged patient is important for the treatment procedures and the quality of life.

Materials and Method

Participants

This cross-sectional study was conducted between December 1, 2010 and May 31, 2011 at the Mersin University Health Research and Implementation Center 1st Internal Medicine Department and Outpatient Chemotherapy Unit, and at the Mersin State Hospital Outpatient Chemotherapy Unit, Medical Oncology Department and Radiation Oncology Department. During this period, 123 patients aged 65 or above presented at the mentioned clinics.

Inclusion criteria were as follows:

- Age 65 or older,
- Chronic pain for three months or longer,
- Physical and cognitive capacity sufficient to answer the forms used in the study,
- Absence of pain only during the data collection,
- Voluntary participation in the study.

A total of 106 patients responding to the eligibility criteria were recruited into the study.

Instruments

Study data were collected using a Personal Information Form for personal characteristics, the McGill Pain Questionnaire (MPQ) to define the pain characteristics, and the State-Trait Anxiety Inventory (STAI) to evaluate the patients' anxiety levels.

The Personal Information Form was developed, after an extensive literature search, to collect certain sociodemographic data and characteristics related to disease and treatment, which were considered to possibly affect the patients' pain and anxiety (4, 17-20). This form contained ten questions regarding sociodemographic characteristics (such as sex, age, marital status, educational level, financial condition, household members, etc.) and ten other questions regarding disease and treatment characteristics (such as disease duration, treatment methods, concomitant disease, etc.)

The MPQ was developed in 1971 by Melzack and Torgerson (21) and the study of its validity and reliability for our country was conducted by Kuğuoğlu et al. (22). The MPQ consists of four parts. In the first part, the patient is invited to mark the location of the pain on a drawing. The second part contains 20 sets of words to assess the pain from the sensory, affective and evaluative aspects. The third part contains word groups to assess the pain duration and frequency and the factors that intensify or reduce it. The fourth part contains five word groups covering pain intensities from mild to excruciating and, separately, six questions to characterize the level of pain "one can live with" or "target pain level", i.e., a pain level that the patient can tolerate or live with without being incapacitated (22).

The State-Trait Anxiety Inventory (STAI-I and STAI-II) was developed in 1970 by Spielberger et al. to evaluate state anxiety and trait anxiety levels separately from each other. Its validity and reliability for Turkey was assessed by Öner and Le Compte (23). Each of the two scales of this self-report assessment consists of 20 questions, to evaluate state anxiety and trait anxiety. The total score increases along with the anxiety level of the person answering the questionnaire (23).

Data Collection

Necessary Ethical Committee approvals and institutional authorizations were obtained before starting data collection. The patients were informed about the objective of the study and their consent obtained. Considering the frequent impairment of eyesight and generally low level of literacy among elderly patients, the questions were asked orally by the investigator. The individual time to answer questionnaires ranged from 5 to 10 minutes for the Personal Information Form, 10-15 minutes for the MPQ and 15-25 minutes for the STAI. The disease diagnosis, concomitant chronic disease, treatment cycle or radiation session numbers were obtained from the patients' medical records.

Statistical Evaluation

We confirmed the normality of scores of McGill Pain Questionnaire (MPQ) and The State-Trait Anxiety Inventory with Shapiro and Wilks normality test. Student's t-test and one-way analysis of variance (ANOVA) were used to compare the different scores according to demographic characteristics. Correlations between scores were tested by Pearson's correlation analysis. Pairwise comparison by the Least Significant Difference (LSD) test was applied for significant differences. Means and standard deviations were used as descriptive statistics. The limit for statistical significance was accepted as a p-value <0.05.

Results

Of the patients in the study, 79.2% were aged 65-74; 54.7% were male, 55.7% were literate or had finished elementary school; 83.0% were not gainfully occupied. While 77.4% were part of a nuclear family, 56.6% had an income lower than their expenses (Table 1). No statistically significant differences according to the various socio-demographic characteristics could be identified for the MPQ and STAI scores.

Time since diagnosis was shorter than a year in 48.1% of patients. MPQ sub-dimension scores and total score means in patients with a disease duration longer than five years were higher than in patients diagnosed less than a year ago ($p<0.05$). Another, concomitant, chronic disease was present in 62.3% of the cases. Patients reported "feeling sick" in a proportion of 71.7%. The MPQ sensory, affective and mixed sub-dimension scores and total scores were found to be higher in those patients who felt "very sick" compared to those who reported feeling "sick" ($p<0.05$).

Table 1— Sociodemographic Characteristics of the Patients.

Sociodemographic Characteristics	n	%
Age		
65-74	84	22.0
75 and over	79.2	20.8
Gender		
Female	48	45.3
Male	58	54.7
Education status		
Iliterate	37	34.9
Literate /primaryeducation	59	55.7
High school/graduate/undergraduate	10	9.4
Work status		
Working	18	17.0
Unemployed	88	83.0
Family type		
Extended family	24	22.6
Nuclear family	82	77.4
Income status		
Low income	60	56.6
Income equal to expenses	46	43.4

Patients reported very frequently experiencing the following: nausea/vomiting in 53.9%, loss of appetite in 76.4% and diarrhea/constipation in 46.1%. Statistically significant differences were found in the MPQ total score as well as sensory, affective and mixed sub-dimension scores according to the frequency of experienced nausea/vomiting episodes ($p<0.05$). The STAI showed a significant difference according to the frequency of anorexia ($p<0.05$). The MPQ score of patients who experienced "frequent" diarrhea/constipation was higher than that of patients who had it "rarely" ($p<0.05$) (Table 2).

The mean duration of the painful condition was 9.18±10.49 months (range 3-60); 12.3% of patients described its frequency as "continuous" and 55.7% as "several times daily". The MPQ total score and sub-dimension and the STAI score of patients who experienced "continuous" pain throughout the day were found to be higher than those of patients who described its frequency as "several times weekly" ($p<0.05$). "Any time during the day" was the description of the timing of pain for 66% of patients. The MPQ total score and mixed and evaluative sub-dimension score means were higher for patients who described the timing of pain as "at noon and in the afternoon", or "mornings and evenings" compared to those who experienced pain "anytime in the day" ($p<0.05$). The STAI score average of patients experiencing pain predominantly "mornings and evenings" was also higher than for the three other groups ($p<0.05$). Pain was felt as being "deep" by 42.5%, "superficial" by 9.4% and "both deep and superficial" by 48.1% of the patients. The difference among these groups was statistically significant ($p<0.05$) (Table 3).

The overall pain level of patients was moderate and their anxiety level high (Table 4). Both total and sub-dimension MPQ scores were positively correlated with their STAI scores ($p<0.001$) (Table 5).

Discussion

The overall pain level of patients in our study was moderate and their anxiety level high (Table 4). A parallel correlation was established between the patients' pain and anxiety mean scores. Studies have shown the experience of pain to be particularly frequent among elderly cancer patients, as it was in our study (5-7,16,17). Our literature search failed, however, to discover a study exploring the correlation between pain and anxiety in geriatric cancer patients.

The perception of pain may be affected by the age-related impairment of nerve conduction velocity and opioid receptor density, invasive interventions for the diagnosis and treatment of cancer, tumor infiltration, insufficient frequency of pain evaluation, anxiety about opioid addiction, neglect of pain treatment as a priority, social isolation related to the diagnosis and negative experiences related to pain (24,25). Age-related factors that may increase the elderly patient's anxiety level include the increased incidence of chronic disease, the loss of friends and relatives, the loss of a social role, difficulties in coping with ADL, fear of death, fear of known or unknown aspects of cancer, anxiety about the future, the thought that therapy is not working, the length of treatment, the adverse effects of both disease and treatment, social isolation and insufficient social support (13,17,26). It may also be said that, in addition to the above, the experience of pain adversely influences the anxiety level of elderly patients; anxiety level increases with increasing pain. It has also been suggested that a high anxiety level contributes to increased sensitivity to pain.

Time since diagnosis was shorter than a year in 48.1% of the patients in the study. Those who had been diagnosed with cancer longer than five years ago were found to have elevated scores on the sensory, affective and mixed sub-dimensions of the MPQ. This might be related to an increased vulnerability over time to pain caused by both cancer and its treatment.

More than half of the aged patients in the study receiving chemotherapy and/or radiation experienced "frequent" nausea/vomiting. A study similar to ours found that patients over 60 experienced more intense/frequent post-chemotherapy nausea (25,26). We found that, among patients treated with chemotherapy and/or radiation, those who described the frequency of nausea/vomiting, loss of appetite and diarrhea/constipation as "frequently" displayed a high level of both pain and anxiety. Cancer-related symptoms, adverse effects of chemo-radiotherapy and the lack of control of these adverse effects may be increasing the patients' anxiety level and pain perception. A study report indicated that the extended duration of chemotherapy and the uncontrolled adverse effects of cancer cause an increase in anxiety level (26).

"Several times a day" and "Any time during the day" was the description of the timing of pain for more than half the patients. The pain and anxiety levels of patients experiencing pain predominantly "mornings and evenings" were also higher than in other groups. A published study has indicated that elderly patients experienced pain predominantly in the afternoon or during the entire day (9). While acute pain in cancer patients is often related to diagnostic and therapeutic procedures, chronic pain is the result of tumor infiltration of or

Table 2— Distribution, by Symptoms Experienced by the Patients, of Average McGill Pain Questionnaire and State Trait Anxiety Scores.

Symptomsand Incidence	n	%	McGill Pain Questionnaire Score Averages					The State-Trait Anxiety Inventory Score Averages	
			Sensory (mean±sd)	Affective (mean±sd)	Evaluative (mean±sd	Mixed (mean±sd)	MPQTotal (mean±sd)	State Anxiety Inventory Score (mean±sd)	Trait Anxiety Inventory Score (mean±sd)
Nausea/vomiting (n= 89)									
Frequently	48	53.9	18.71±6.39	5.83±2.10	3.79±1.15	8.06±3.19	36.40±11.57	50.38±6.46	43.90±6.00
Sometimes	26	29.2	20.50±5.34	6.31±1.76	3.88±0.99	8.85±2.81	39.54±9.56	49.69±5.25	43.19±5.28
Rarely	15	16.9	15.07±6.15	4.60±2.03	3.40±1.06	6.73±2.66	29.80±10.86	49.93±6.20	42.73±4.38
p			0.025	0.033	0.370	0.100	0.026	0.894	0.739
Appetite (n= 89)									
Frequently	68	76.4	19.16±6.07	5.93±1.99	3.76±1.11	8.16±3.04	37.01±10.91	51.12±6.14	44.18±5.84
Sometimes	16	18.0	16.88±6.95	5.38±2.42	3.81±0.98	7.88±3.24	33.94±12.83	47.25±4.70	41.38±3.84
Rarely	5	5.6	16.80±6.38	4.80±1.30	3.40±1.34	7.40±3.05	32.40±11.10	45.40±2.88	41.00±3.00
p			0.340	0.353	0.753	0.834	0.460	0.012	0.109
Diarrhea/constipation (n= 86)									
Frequently	41	46.1	20.15±5.69	6.24±2.08	3.88±1.10	8.54±3.02	38.80±10.72	51.63±5.80	45.22±5.26
Sometimes	34	38.2	17.91±6.49	5.50±1.94	3.76±1.07	8.06±3.05	35.24±11.16	49.74±6.17	43.03±5.80
Rarely	11	12.4	16.36±6.33	5.00±1.95	3.55±1.04	7.00±3.03	31.91±11.54	44.33±6.66	40.27±2.80
p			0.112	0.191	0.273	0.243	0.114	0.038	0.005

Table 3— Distribution of Pain Characteristics by McGill Pain Questionnaire and State Trait Anxiety Scores.

			McGill Pain Questionnaire Score Averages					The State-Trait Anxiety Inventory Score Averages	
Symptomsand Incidence	n	%	Sensory (mean±sd)	Affective (mean±sd)	Evaluative (mean±sd	Mixed (mean±sd)	MPQTotal (mean±sd)	State Anxiety Inventory Score (mean±sd)	Trait Anxiety Inventory Score (mean±sd)
The frequency of experiencing pain									
Continuous	13	12.3	21.31±6.90	6.92±1.93	4.31±0.85	9.23±2.71	41.85±11.23	52.15±7.01	45.85±6.88
Several times daily	59	55.7	19.76±5.38	6.03±1.88	3.93±0.98	8.68±2.87	38.41±9.68	50.78±5.70	44.42±5.16
Several times weekly	34	32.1	14.65±5.97	4.44±1.85	3.00±1.10	6.15±2.70	28.24±10.47	47.06±5.21	39.56±3.38
P			p<0.001	p<0.001	p<0.001	p<0.001	p<0.001	0.004	p<0.001
Time of occurrence of pain									
Evening	9	8.5	18.22±6.18	6.00±2.74	4.00±1.22	8.00±3.04	36.22±12.29	49.00±6.61	44.75±6.06
At noon and in the afternoon	16	15.1	20.81±4.94	6.25±1.34	4.31±0.60	9.94±2.74	41.31±8.14	50.31±5.00	44.13±4.98
Anytime in the day	70	66.0	17.47±6.07	5.24±2.02	3.49±1.11	7.37±2.92	33.59±10.91	48.90±5.65	41.90±4.83
Morning and evening	11	10.4	20.09±8.53	6.91±1.92	3.73±1.27	8.55±3.21	39.27±14.15	55.00±6.77	47.27±7.13
p			0.196	0.034	0.041	0.018	0.055	0.015	0.009
Pain feature									
Deep	45	42.5	16.93±6.43	5.27±2.09	3.56±1.08	7.31±2.63	33.07±11.18	48.67±5.74	42.04±5.13
Superficial	10	9.4	12.80±6.20	4.10±1.52	2.70±1.16	5.60±2.01	25.20±9.99	47.80±5.51	40.90±3.90
Both deep and superficial	51	48.1	20.61±5.10	6.25±1.89	3.98±1.01	8.94±3.18	39.80±9.70	51.10±6.08	44.33±5.74
P			p<0.001	0.002	0.002	0.001	p<0.001	0.076	0.050

impingement on bone, soft tissues, nerves, and blood and lymph vessels. As a result, continuous and intermittent pain is often seen in cancer patients. The increase of the duration of pain during the day and the unpredictability of its time of onset may cause anxiety by negatively affecting the patients' ALD, quality of life and coping capacity. Almost half of the patients in our study experienced pain as being "both deep and superficial". Uncontrollable pain is the most frequent cause of anxiety in cancer patients. The feeling of pain as being both deep and superficial may negatively impact the patient's pain sensation, perception of pain intensity and anxiety level. Pain medication was being used by 90.6% of our patients. It was established that the pain and anxiety levels of patients who were receiving pain medication were higher than in those who were not. More than half our patients reported experiencing cancer pain "several times a day". The persistence of pain during the day may be influencing the anxiety level. Also, positive correlation was founded between the patient's' pain and anxiety mean scores in our study. So that anxiety level may be increasing pain level. Studies report indicated that the high anxiety level cause an increase in pain level (11,13).

Table 4— Patient's MPQ and the State-Trait Anxiety Inventory Score Averages (n= 106).

	mean±sd	*Min-Max
MPQ-Sensory	18.31±6.27	5.00-33.00
MPQ-Affective	5.63±2.05	1.00-10.00
MPQ-Evaluative	3.68±1.11	1.00 - 5.00
MPQ-Mixed	7.93± 3.04	3.00-15.00
MPQ-Total	35.57±11.29	11.00-60.00
State Anxiety Inventory	49.75±5.98	38.00-66.00
Trait Anxiety Inventory	43.04±5.45	33.00-59.00

*Min: Minimum

*Max: Maximum

Table 4— Patient's McGill Pain Questionnaire Inventory Total and Subdimension Score and State Trait Anxiety Inventory Score Correlations

	Sensory (r)	Affective (r)	Evaluative (r)	Mixed (r)	McGill Total (r)	StateAnxiety Inventory (r)	TraitAnxiety Inventory (r)
Sensory	1	0.777**	0.683**	0.706**	0.953**	0.296**	0.392**
Affective		1	0.618**	0.749**	0.874**	0.381**	0.427**
Evaluative			1	0.777**	0.799**	0.238*	0.281**
Mixed				1	0.872**	0.305**	0.348**
McGill					1	0.338**	0.415**
State Anxiety Inventory						1	0.830**
Trait Anxiety Inventory							1

**p<0.01 significant; *p<0.05

REFERENCES

1. Allard P, Maunsell E, Labbe J, Dorval M. Educational interventions to improve cancer pain control; A systematic review. Journal of Palliative Medicine 2001;4(2):191-203. (PMID:11441627).
2. Cherny NI, Portenoy RK. Cancer pain management. Cancer 1993;72(1):3415-93. (PMID:7902204).
3. Swenson CJ. Pain management, In: Otto S. (Eds). Oncology Nursing. 4th edition, St. Louis: Mosby, 2001, pp 865-916.
4. Melzack R, Wall DP, Erdine S. Manual for pain manegement. Güneş Bookstore, Ankara; 2006, pp 10-30.
5. Bernabei R, Gambassi G, Lapane K, et al. Management of pain in elderly patients with cancer. Journal of the American Medical Association 1998;279(23):1884-7. (PMID:9634258).
6. Rao A, Cohen HJ. Symptom management in the elderly cancer patient: Fatigue, pain, and depression. Journal of the National Cancer Institute Monographs 2004;32:150-7. (PMID:15263059).
7. Torvik K, Hølen J, Kaasa S, et al. Pain in elderly hospitalized cancer patients with bone metastases in Norway. International Journal of Palliative Nursing 2008;14:238-45. (PMID:18563017).
8. Alacacıoğlu A, Yavuzşen T, Diriöz M, et al. Changes in anxiety levels patients with cancer receiving chemotherapy. International Journal of Hematology and Oncology 2007;2(17):87-93.
9. Yıldız A, Erol S, Ergün A. Pain and depression risk among elderly people living in a nursing home. Turkish Journal of Geriatrics 2009;12(3):156-64. (in Turkish).
10. Turk DC, Okifuji A. Psychological factors in chronic pain: Evolution and revolution. Journal of Consulting and Clinical Psychology 2002;70(3):690-678. (PMID:12090376).

11. Wasan AD, Artamonov M, Nedeljkovic SS. Delirium, depression, and anxiety in the treatment of cancer pain. Techniques in Regional Anesthesia and Pain Management 2005;9(3):139-44. [Internet] Available from: http://www.techreganesth.org/article/S1084-208X%2805%2900047-9/pdf. Accessed:01.10.2013.
12. Oz F. Uncertainty in Illness Experience. Turkish Journal of Psychiatry 2001;12(1):61-8.
13. Chen ML, Chang HK, Yeh CH. Anxiety and depression in Taiwanese cancer patients with and without pain. Journal of Advenced Nursing 2000;32(4):944-51. (PMID:11095234).
14. Marrs JA. Stress, fears and phobias; The impact of anxiety. Clinical Journal of Oncology Nursing 2006;10(3):322-319. (PMID:16789576).
15. Otis-Green S, Sherman R, Perez M, et al. An integrated psychosocial-spiritual model for cancer pain management. Cancer Practice 2002;10(1):65-58. (PMID:12027971).
16. Eyigor S, Eyigor C, Uslu R. Assessment of pain, fatigue, sleep and quality of life (QOL) in elderly hospitalized cancer patients. Archives of Gerontology and Geriatrics 2010;51(3):57-61. (PMID:20044154).
17. Cheng KK, Lee DT. Effects of pain, fatigue, insomnia, and mood disturbance on functional status and quality of life of elderly patients with cancer. Critical Reviews in Oncology/Hematology 2011; 78(2):127–37. (PMID:20403706).
18. Theobald DE. Cancer pain, fatigue, distress and insomnia in cancer patients. Clinical Cornerstone 2004;6(1):21-15.(PMID:15675653).
19. Villagomeza LR. Spiritual distress in adult cancer patients: Toward conceptual clarity. Holistic Nursing Practice 2005;19(6):285-94. (PMID:16269948).
20. Coşkun U, Özkurt ZN, Günel N. Manegement of cancer pain. International Journal of Hematology and Oncology 2002;12(1): 45-55.
21. Melzack R, Torgerson WS. On the language of pain. Anesthesiology 1971;34(1):50-9. (PMID:4924784).
22. Kuğuoğlu S, Eti Aslan F, Olgun N. Melzack McGill Pain Questionnaire (MPQ)'s adaptation to Turkish. Pain 2003;15(1):47-52.
23. Oner N, Le Complete A. Manual for State Trait Anxiety Inventory. 2nd edition, Boğaziçi University Publications, İstanbul 1985, pp 20-40.
24. Önal A. Pain, In: Erdine S. (Eds). Cancer pain. Nobel Bookstore, İstanbul, 2007, pp 551-62. (in Turkish).
25. Tuna S. Comorbidity and clinical assessment in geriatric patients with cancer. Turkish Journal of Oncolgy 2007;22(4):192-6.
26. Dedeli Ö, Karadeniz G. An integrated psychosocial-spiritual model for cancer pain management. Pain 2009;21(2):45-53.