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ORIGINAL ARTICLE

Evaluation of Factors Affecting Fatigue and Anxiety in Patients with Cancer

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OBJECTIVE
The aim of the present study was to evaluate the factors affecting fatigue impact, severity, and anxiety levels in patients with cancer.

METHODS
Data were collected by applying the information form, Beck Anxiety Scale, Fatigue Impact Scale, and Fatigue Severity Scale to 286 patients with cancer. Statistical analysis was performed by t-test, one-way analysis of variance, Tukey analysis, and Pearson's correlation coefficient.

RESULTS
It was found that 80.1% of the participants were married, 60.8% graduated from primary school, 38.9% were housewives, 62.9% had an average income, 79% had been diagnosed for 6–24 months, 34.3% had adequate information related to illness, and 81.46% had never taken any psychological help. In the study, it was observed that patients who were in the age group of 65-89 age, illiterate, poor economic status, non-working, and those who think that fatigue and anxiety symptoms are the result of treatment suffer from fatigue more severely in their daily live. At the same time, patients who were female, illiterate, tradesmen, had bad economic status, non-working, and with fatigue and anxiety symptoms dependent on treatment had more intense level of fatigue ($p<0.05$).

CONCLUSION
It would be appropriate to provide different education programs to patients with cancer about fatigue and anxiety by taking into account the group variables.

Keywords: Anxiety; cancer; fatigue.

Introduction

Fatigue, which is seen in patients with cancer, is defined as weakness of muscles, accumulation of waste due to cell destruction, anemia, cancer pathology, cancer treatment, pain, anxiety, disruption of sleeping and resting system, and feeling of an unpreventable exhaustion that is caused by social condition and lifestyle. Fatigue can affect their feelings about themselves, daily activities, and relationships with others and block the treatment period.[1-3] Feeling desperate, being unable to plan for the future because of hopelessness, and negative feelings related to illness and treatment cause anxiety for the future of the pa-

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tient. Moreover, it is thought to affect the patients' life quality negatively. In addition to this, the high price of chemotherapy drugs, the long period of illness, and the loss of employment cause economic problems. Hopelessness, uncertainty, despair, future anxiety, and negative feelings that are experienced related to illness and treatment decrease the life quality of the patient.[4] The fear caused by the word "cancer," anxiety for the future, despair, and expectation of "something bad is going to happen" cause anxiety in the patient. The approaches intended for determining and decreasing the factors affecting anxiety and fatigue influence patients with chronic kidney failure and cancer.[5] "Fatigue Severity Scales" and "Fatigue Impact Scales" are used in cancer and other disease studies abroad. However, in our country, we did not find any studies using these scales in patients with cancer. In the present study, we aimed to examine the impact of socio-demographic and illness-related characteristics on fatigue impact, severity by using "Fatigue Severity Scales" and "Fatigue Impact Scales," and anxiety levels.

Materials and Methods

Sampling

The research data were collected from 286 patients with cancer who are under diagnosis for 6 months, who are at least 18 years old, and who are under observation in three education and research hospitals.

Applied Scales and Forms

Descriptive information form, Beck Anxiety Scale (BAS), Fatigue Impact Scale (FIS), and Fatigue Severity Scale (FSS) were applied to patients with cancer.

Beck Anxiety Scale

BAS was translated to Turkish by Ulusoy et al. and is used to determine the frequency of anxiety symptoms.[6] It is a Likert scale consisting of 21 items and contains "no," "low degree," "medium degree," and "serious degree" options. The point interval is 0–63. The Cronbach's alpha degree of the study has been determined as 0.915.

Fatigue Severity Scale

FSS was developed by Krupp et al. to measure the fatigue severity in patients with multiple sclerosis.[7] The Turkish version of the scale was applied to patients with multiple sclerosis by Armutlu et al.[8] The Cronbach's alpha value of the study was determined as 0.979. FSS is a Likert scale consisting of nine items. Each item is graded from 1 (I totally disagree) to 7 (I totally agree). FSS point is the average of items. When the average point is ≥5, it is considered as "there is fatigue."

Fatigue Impact Scale

FIS is used to measure the effects of fatigue in daily activities and quality of life. It was developed by Fisk et al. in clinical and experimental studies.[9] The Turkish version of the scale was applied to patients with multiple sclerosis by Armutlu et al.[8] The Cronbach's alpha value of the study was determined as 0.977 in patients with cancer. FIS is a Likert scale consisting of 40 items. Each item is graded between 0 and 4. The effect of fatigue is considered as none, a little, mid important, and very important.

Statistical Analysis

Data were analyzed using t-test, one-way analysis of variance, Tukey analysis, and Pearson's correlation coefficient.

Results

The average age of the samples was 54.01±15.17 years. It was seen that the sample group comprised 24.1% with lung cancer, 18.9% with breast cancer, 16.1% with colon cancer, 7.3% with uterus cancer, 9.1% with stomach cancer, and 24.5% with other cancer types. The average points of the patients were 18.48±13.75 for BAS, 57.98±39.91 for FIS, and 5.30±1.8 for FSS. It was observed that patients aged between 65 and 89 years had higher scores than patients aged between 46 and 64 years ($p<0.05$). It was observed that female had higher scores than male patients ($p<0.01$). No significant differences due to marital status were observed in three scales ($p>0.05$). It was observed that illiterates had higher points ($p<0.01$) than high school graduates ($p<0.001$) and undergraduates ($p<0.01$) for BAS. It was observed that illiterates had higher points ($p<0.001$) than high school graduates ($p<0.001$) and undergraduates ($p<0.01$) for FIS. It was observed that illiterates and primary school graduates had higher points ($p<0.05$) than high school graduates ($p<0.05$) for FSS. It was observed that tradesmen had higher points than housewives ($p<0.05$).

Patients from lower economic levels had higher scores ($p<0.05$) than those from middle and better economic levels ($p<0.05$) for BAS. Patients from lower economic levels had higher scores ($p<0.01$) than those from better economic levels ($p<0.001$) for FIS. Patients from lower and middle economic lev-

els had higher scores (p<0.01) than those from better economic levels (p<0.001) for FSS. Unemployed patients had higher scores than employed patients (p<0.05) for BAS.

According to the diagnosed and treatment periods, having informed about the illness, level of information about the illness, and having psychological help, there was no significant difference (p>0.05) from all scales.

Table 1 The analysis results done among socio-demographic- and disease-related variables and BAS

Variables	Variables categories	n	%	Mean point	SD	F/t	p
Age (year)	17-45	83	29	17.96	13.01	F=1.79	0.16
	46-64	126	44.1	17.30	12.85		
	65-89	77	26.9	20.97	15.67		
Gender	Female	142	49.7	19.85	14.04	t=1.68	0.09
	Male	144	50.3	17.13	13.36		
Marital status	Married	229	76.0	18.16	13.34	t= 0.79	0.42
	Single	57	20.8	19.78	15.34		
Education	Illiterates	30	10.5	29.73	17.39	t=8.72	0.00***
	Primary school	174	60.8	17.19	12.72		
	High school	44	15.4	15.22	11.46		
	Undergraduate	38	13.3	19.28	13.63		
Occupation	Self-employed	43	15	17.16	12.86	F=1.11	0.35
	Tradesmen	83	29	21.06	15.43		
	Worker	43	15	18.18	13.49		
	Officer	36	12.6	18.05	14.25		
	Housewife	81	28.3	16.90	12.14		
Economic level	Bad	45	15.7	23.82	18.05	F=4.41	0.01**
	Middle	180	62.9	17.88	12.70		
	Good	61	21.3	16.32	12.27		
Working condition	Yes	63	22	15.01	10.76	t=2.28	0.02*
	No	223	78	19.46	14.35		
Diagnosis time	6-24	226	79	17.86	13.55	F=1.26	0.28
	26-60	40	14	20.07	13.28		
	61-216	20	7	22.30	16.48		
Treatment time	1-24	228	79.7	18.03	13.73	F=0.84	0.43
	25-60	42	14.7	19.52	13.20		
	61-216	16	5.6	22.25	15.50		
Having informed about the illness	Yes	86	30.1	16.66	13.18	F=0.53	0.14
	No	200	69.9	19.27	13.94		
Level of information about the illness	Enough	98	34.3	16.26	12.01	F=2.28	0.10
	Little	135	47.2	20.14	14.52		
	Nothing	53	18.5	18.35	14.39		
Having psychological help	Yes	53	18.5	20.05	14.08	t =0.92	0.35
	No	233	81.46	18.12	13.67		
Fatigue and anxiety were caused by treatment	Yes	210	73.42	19.71	14.23	F=5.57	0.00***
	No	42	14.68	18.07	12.94		
	Part	34	11.88	11.38	8.87		
Chemotherapy	Not taking	46	83.9	20.36	16.77	t =1.01	0.31
	Taking	240	16.1	18.12	13.10		
Radiotherapy	Not taking	160	44.1	18.75	14.53	t =0.37	0.70
	Taking	126	55.9	18.14	12.73		
Operation	Not taking	214	25.2	18.78	13.36	t =0.63	0.52
	Taking	72	74.8	17.59	14.91		

*p<0.05; **p<0.01; ***p<0.001. Analysis of variance, Tukey, and t-test

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It was observed that patients who thought that fatigue and anxiety were caused by treatment had higher points than those who did not have the same opinion (p<0.01) for BAS and FIS. Patients who thought that fatigue was caused by treatment had higher points than both those who thought that fatigue was partially caused by treatment (p<0.001) and those who thought fatigue was not caused by treatment (p<0.01). Patients who received

Table 2 The analysis results done among socio-demographic- and disease-related variables and FIS

Variables	Variables categories	n	%	Mean point	SD	F/t	p
Age (year)	17-45	83	29	55.56	34.91	F=3.96	0.02*
	46-64	126	44.1	53.03	36.78		
	65-89	77	26.9	68.67	47.64		
Gender	Female	142	49.7	59.75	38.12	t=0.74	0.45
	Male	144	50.3	56.23	41.65		
Marital status	Married	229	76.0	57.54	40.18	t=0.37	0.71
	Single	57	20.8	59.73	39.08		
Education	Illiterates	30	10.5	94.76	48.87	F=13.5	0.001***
	Primary school	124	60.8	56.11	37.49		
	High school	44	15.4	38.88	31.48		
	Undergraduate	38	13.3	59.60	33.50		
Occupation	Self-employed	43	15	59.74	41.62	F=0.8	0.48
	Tradesmen	83	29	63.91	42.08		
	Worker	43	15	56.27	41.61		
	Officer	36	12.6	51.66	40.35		
	Housewife	81	28.3	54.67	35.48		
Economic level	Bad	45	15.7	79.22	45.12	F=10.6	0.00***
	Middle	180	62.9	57.32	38.83		
	Good	61	21.3	44.26	32.28		
Working condition	Yes	63	22	46.26	33.64	t=2.66	0.08
	No	223	78	61.29	40.97		
Diagnosis time	6-24	226	79	58.01	40.90	F=0.02	0.97
	26-60	40	14	57.07	34.23		
	61-216	20	7	59.40	40.85		
Treatment time	1-24	228	79.7	58.63	41.35	F=0.16	0.84
	25-60	42	14.7	56.0	33.97		
	61-216	16	5.6	53.87	34.57		
Having informed about the illness	Yes	86	30.1	56.25	36.62	t=0.47	0.63
	No	200	69.9	58.72	41.30		
Level of information about the illness	Enough	98	34.3	50.60	32.02	F=2.57	0.07
	Little	135	47.2	61.81	44.67		
	Nothing	53	18.5	61.86	38.97		
Having psychological help	Yes	53	18.5	61.41	36.05	t=0.69	0.48
	No	233	81.46	57.20	40.76		
Fatigue and anxiety were caused by treatment	Yes	210	73.42	62.81	40.82	F=7.05	0.0001***
	no	42	14.68	50.38	39.79		
	Part	34	11.88	37.52	24.12		
Chemotherapy	Not taking	46	83.9	63.91	49.38	t=1.10	0.27
	Taking	240	16.1	56.84	37.84		
Radiotherapy	Not taking	160	44.1	62.03	39.56	t=1.94	0.05*
	Taking	126	55.9	52.84	39.91		
Operation	Not taking	214	25.2	61.66	40.44	t=2.71	0.0001***
	Taking	72	74.8	47.04	36.40		

*p<0.05; **p<0.01; ***p<0.001. Analysis of variance, Tukey, and t-test

Table 3 The analysis results done among socio-demographic- and disease-related variables and FSS

Variables	Variables categories	n	%	Mean point	SD	F/t	p
Age (year)	17-45	83	29	5.08	1.89	F=3.96	0.07
	46-64	126	44.1	5.20	1.78		
	65-89	77	26.9	5.69	1.72		
Gender	Female	142	49.7	5.57	1.59	t=2.49	0.01**
	Male	144	50.3	5.04	1.97		
Marital status	Married	229	76.0	5.31	1.80	t=0.25	0.80
	Single	57	20.8	5.24	1.85		
Education	Illiterates	30	10.5	6.27	1.37	F=6.1	0.001***
	Primary school	124	60.8	5.30	1.77		
	High school	44	15.4	4.50	1.98		
	Undergraduate	38	13.3	5.45	1.69		
Occupation	Self-employed	43	15	5.30	1.54	F=2.6	0.03*
	Tradesmen	83	29	5.76	1.61		
	Worker	43	15	5.33	1.90		
	Officer	36	12.6	5.22	1.73		
	Housewife	81	28.3	4.85	2.02		
Economic level	Bad	45	15.7	5.77	1.46	F=4.65	0.01**
	Middle	180	62.9	5.37	1.82		
	Good	61	21.3	4.74	1.88		
Working condition	Yes	63	22	4.76	2.02	t=2.71	0.07
	No	223	78	5.45	1.72		
Diagnosis time	6-24	226	79	5.28	1.81	F=0.05	0.94
	26-60	40	14	5.39	1.83		
	61-216	20	7	5.30	1.82		
Treatment time	1-24	228	79.7	5.30	1.81	F=0.01	0.98
	25-60	42	14.7	5.26	1.84		
	61-216	16	5.6	5.34	1.76		
Having informed about the illness	Yes	86	30.1	5.17	1.93	t=0.79	0.42
	No	200	69.9	5.35	1.75		
Level of information about the illness	Enough	98	34.3	4.99	1.85	F=2.57	0.07
	Little	135	47.2	5.39	1.75		
	Nothing	53	18.5	5.63	1.80		
Having psychological help	Yes	53	18.5	5.03	1.70	t=1.17	0.24
	No	233	81.46	5.36	1.82		
Fatigue and anxiety were caused by treatment	Yes	210	73.42	5.63	1.65	F=14.34	0.00***
	No	42	14.68	4.27	2.09		
	Part	34	11.88	4.55	1.74		
Chemotherapy	Not taking	46	83.9	4.99	1.73	t=1.26	0.20
	Taking	240	16.1	5.36	1.82		
Radiotherapy	Not taking	160	44.1	5.38	1.83	t=0.81	0.41
	Taking	126	55.9	5.20	1.78		
Operation	Not taking	214	25.2	5.34	1.81	t=0.72	0.47
	Taking	72	74.8	5.16	1.79		

*p<0.05; **p<0.01; ***p<0.001. Analysis of variance, Tukey, and t-test

radiotherapy had higher points than those who did not (p<0.05) for FIS. Patients who did not have an operation had higher points than those who had an operation (p<0.05) for FIS< (Table 1, 2, 3).

Discussion

In the present study, it was seen that patients with cancer had medium anxiety level, they were tired, and this

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fatigue impacted their daily lives. Fatigue is a common symptom seen in all cancer treatments, and there are multiple relationships between treatment type, dose, side effects, and fatigue.[10-12] The severity of fatigue felt by patients and its effects on the patient changes depending on several environmental and individual factors.[13] It was determined that the 19–45 and 46–64 age groups had low anxiety level, whereas the 65–89 age group had medium anxiety level. Moreover, patients in each group were generally tired. Fatigue has a low level effect on the daily life of the 19–45 age group, whereas it has a medium level effect on the 65–89 age group. Tralongo et al. determined that patients who are aged ≥65 years with cancer complained about fatigue more than others.[14] Getting older and the fear of death because of the disease process may cause an increase in anxiety level. Female patients had medium anxiety level, whereas male patients had low anxiety level. Scheier et al. reported that female patients have high anxiety level.[15] Fatigue impacts male patients' lives slightly, whereas it affects females' lives moderately. Hwain et al. also indicated that female patients have a more significant fatigue level.[16] This may be because of women having more responsibilities, such as housework and children, among others. Single and married patients have moderate anxiety levels, they are tired, and their tiredness affects their daily lives moderately. According to Dedeli's study, social support is beneficial, and there is a positive relationship between the family members' emotional support and patients' wellness.[17] A social support that will be given may decrease the fatigue and anxiety levels of married and single patients.

We observed that illiterate patients had moderate level of anxiety. Illiterate patients' lives were affected moderately by tiredness, whereas others were affected slightly. Loge et al. indicated that tiredness increases when education level decreases.[18] Low-educated patients correlate their viewpoint through cancer with death, and this may cause an increase in anxiety level. Tradesmen had moderate anxiety level, whereas patients from other professions had low anxiety level. Fatigue has moderate effect on tradesmen, whereas it has a slight effect on patients from other professions. Tradesmen have to struggle not only at home but also at work, and this may increase anxiety and fatigue. Patients with low economic levels had moderate anxiety levels, whereas patients with medium and good economic levels had low anxiety levels. Economic problems are important factors that complicate getting over with the illness.[19] It was determined that employed patients had low anxiety level, whereas unemployed patients had medium anxiety level. In the present study, fatigue affected all patients' lives slightly, and employed patients were not tired, whereas unemployed patients were tired. Curt et al. stated that patients with cancer have fatigue after diagnosis, and that 75% of them have to change their jobs because of fatigue.[20] Patients who had 6–24 months of diagnosis had low anxiety level, and patients with 2–5 years and ≥5 years of diagnosis had medium anxiety level. Cancer diagnosis and treatment may cause harm in the patient's quality of life, psychological situation, and patient's adaptation to illness. Beser and Oz reported that anxiety and depression increase during the treatment and illness periods and affect the patient's quality of life negatively.[10] Lampic et al. stated that patients with cancer diagnosis have difficulty in adapting the illness and treatment periods, and that they cannot meet their social needs.[21] This situation may cause anxiety in patients. In our study, patients in all groups were tired, and tiredness affected their lives slightly. Fatigue may reduce physical adequacy and handicap social relationships.[22]

Patients with adequate information related to illness had low anxiety level, whereas those without information had medium anxiety level; both groups were tired, and tiredness affected their lives slightly. Armay et al. stated that the patients' level of knowledge about the illness may determine their responses.[23]

Sufficiency of information may enable to overcome the illness, remove catastrophic conception, and have positive effects on responses about the illness. It may be thought that patients having been educated about the illness and knowing how to overcome it may be effective in decreasing fatigue. Barcevick et al. determined that a program on avoiding energy wasting and activity management has an effect on decreasing fatigue.[24] Patients with and without psychological help had medium anxiety level; patients in both groups were tired, and tiredness affected their lives slightly. It is important to consider the effects of medicines on fatigue and sleep. Patients who thought that anxiety was caused by treatment and those who had the opposite idea had medium anxiety level. Patients who thought that fatigue and anxiety were partially caused by treatment had low anxiety level. According to the FSS, patients who thought that fatigue and anxiety were caused by treatment were tired, but the other group was not. Pınar et al. determined that patients with cancer not only have symptoms caused by the illness period but also have anorexia that was a side effect of radiotherapy and physical and emotional symptoms, such as

cachexia, taste differences, nausea–vomiting, fatigue, depression, and anxiety.[25] We did not observe an important difference on anxiety level between patients who had chemotherapy and who did not. Patients who had chemotherapy were not tired. Beser and Oz stated that patients who are worried about their future have an increase anxiety level after chemotherapy.[10] The uncertainty of the chemotherapy period and the negative effects of the side effects of chemotherapy may cause anxiety in patients with cancer. Curt et al. stated that fatigue is the most common side effect in patients who have chemotherapy. Fatigue affected the daily lives of patients with radiotherapy more than those who did not. The physiological changes in all treatment periods may cause anxiety and anxiety-related fatigue in patients.[20] Patients who had an operation had low anxiety level. The effect of fatigue on patients who had an operation may be because of the long recovering period.

Conclusion

According to the results of our study, it is thought that fatigue was caused by socio-demographic and other illness-related variables more than treatment types. Fatigue in patients with cancer may occur because of several reasons, such as socio-demographic, illness-related characters, and physiological factors. Education programs that would be prepared with taking these variables into account could considerably affect anxiety and fatigue levels.

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