ORIGINAL ARTICLE

Correlation of self-efficacy and symptom control in cancer patients

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Abstract

Objective This cross-sectional study was planned to evaluate the self-efficacy and symptom control of cancer patients and to determine the factors affecting them.

Methods The sample of the study consisted of 329 cancer patients who were treated in the Medical Oncology Clinic of a university hospital between April and June 2019 and accepted to participate in the study. Data were collected using the Patient Characteristics Information Form, Cancer Behavior Inventory-Short Version (CBI-SV), and Edmonton Symptom Assessment Scale (ESAS). Percentage, mean, Mann–Whitney U test, and Kruskal–Wallis analysis of variance were used in the analysis of the data.

Results The mean CBI-SV score of the patients was 79.10 ± 17.55. It was determined that the highest mean score of ESAS of the patients was in the symptom of fatigue (3.53 ± 2.81). Some symptoms were statistically lower in patients with good income, who are working, and who are non-smokers. Also it was determined that the self-efficacy levels of the patients with good income and quitting smoking were higher ($p < 0.05$). At the same time, as the patients' self-efficacy scores increased, the severity of the symptoms they experienced decreased statistically ($p < 0.05$).

Conclusion It was found that the patients' self-efficacy score was above the moderate level, the most intense symptom experienced by the patients was fatigue, and the severity of the symptoms decreased as the patients' self-efficacy level increased. In line with these results; the symptoms, self-efficacy perceptions, and affecting factors of cancer patients should be evaluated by nurses at regular intervals, and care and consultancy services should be provided.

Keywords Cancer patient · Symptom control · Self-efficacy · Nursing evaluation · Nursing care

Introduction

Cancer, one of the most important health problems of today, is one of the diseases that affect human life biologically, psychologically, socially, and economically. As the exposure to environmental carcinogens increases with the developing technology, the number of cancer cases is also increasing. At the same time, with the development of cancer diagnosis possibilities and the increase in the opportunities to benefit from health institutions, more cancer cases are diagnosed every year. It has been announced that 19 million people were newly diagnosed with cancer worldwide in 2020 and 9.9 million people died from cancer. According to the latest statistics, it has been declared that the total incidence of cancer in Turkey is 210.2 per hundred thousand; a total of 163,417 people were diagnosed with new cancer [1–3].

With the diagnosis of the disease, many patients have to be treated with one or more of many treatment approaches such as surgical treatment, chemotherapy, radiotherapy, hormone therapy, and biotherapy. Among these treatment approaches, chemotherapy can cause many complaints such as fatigue, nausea-vomiting, loss of appetite, and skin and nail changes, which cause deterioration in the patient's quality of life, according to the chemotherapy protocol applied during the treatment [4, 5]. This may affect the self-efficacy of the individual by causing physical and psychological discomfort in patients [4–8].

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Self-efficacy, which is defined as the belief that an individual can successfully perform the behavior aimed at promoting health, is stated to be the most important factor affecting the participation of individuals in their individual care and health-promoting practices. As individuals' self-efficacy increases, they feel healthier both physically and psychologically [8, 9]. In this context; it is very important to determine the degree of symptoms experienced by cancer patients, to determine how much they bother the person, and to evaluate their self-efficacy in coping with these symptoms in order to increase the quality of life by maintaining the treatment effectively. Studies show that as individuals' self-efficacy perceptions increase, they are better able to tolerate their physical and psychological symptoms [9, 10]. In the literature, the number of studies determining the symptom severity, self-efficacy level, and affecting factors of cancer patients is almost non-existent. It is very important to determine self-efficacy perceptions along with the symptoms experienced by cancer patients, especially in order to cope with this difficult and complex situation that cancer patients are in [4, 6–8]. Therefore, this study was planned to evaluate the self-efficacy and symptom control of cancer patients.

Methods

Sample of the study

The study is a descriptive and cross-sectional study. Ethics committee permission (08.04.2019/TUFM-SREC 2019/166) and permission from the institution where the research was conducted were obtained in order to conduct the research. Before the study, the purpose and scope of the study were explained to the patients included in the sample group, and their verbal consent was obtained. The population of the study consisted of all cancer patients treated in the Medical Oncology Clinic of a university hospital between April and June 2019. We invited 342 eligible patients. Nonresponse rate was 3.8%. Therefore, the sample of the study is a total of 329 cancer patients who accepted to participate in the study.

Outpatients and hospitalized patients with an ECOG (Eastern Cooperative Oncology Group) performance score of < 2 were included in the study. Before starting data collection, patients were informed about the purpose of the study and that the confidentiality of the data would be protected. The study was carried out by face-to-face interview method with patients who were treated in the Medical Oncology Clinic. It took approximately 10 min for the patients who agreed to participate in the study to fill out the personal information form and questionnaire.

Research data were collected by using face-to-face interviews with patients, a Questionnaire Form containing Patient-Related Characteristics prepared by the researchers in line with

the literature, Cancer Behavior Inventory-Short Version (CBI-SV), and Edmonton Symptom Assessment Scale (ESAS).

Instruments

Patient Characteristics Information Form The form was prepared by the researchers in line with the literature and consists of two parts [6, 7, 9]. In the first part, the patient's personal characteristics (gender, age, marital status, educational status, smoking and alcohol use, etc.) and, in the second part, the characteristics of the disease (diagnosis of the disease, time from diagnosis, surgical treatment, radiotherapy status, etc.) questions are included.

Cancer Behavior Inventory-Short Version Cancer Behavior Inventory-Short Version (CBI-SV) was developed by Heitzmann et al. in 2011, and its validity and reliability were verified by İyigün et al. in 2017 [8]. The CBI-SV is derived from the 33-item "Cancer Behavior Inventory-Long Version 2.0." This inventory is a 12-item one-dimensional measurement tool designed to assess cancer patients' self-efficacy in coping with their disease. Each item of this 12-item scale is scored between 1 and 9. The scale score is calculated as the sum of all items. The scale does not have a score range. High scores obtained from the scale indicate high self-efficacy in coping with disease [11].

Edmonton Symptom Assessment Scale Edmonton Symptom Assessment Scale (ESAS) was developed by Bruera et al. in 1991 [12] and its validity and reliability were evaluated by Kurt and Unsar in 2009 [7]. Scale helps evaluate nine common symptoms in cancer patients. These symptoms are pain, fatigue, nausea, sadness, anxiety, drowsiness, loss of appetite, sense of well-being, shortness of breath, and other problems. Three additional symptoms (skin and nail changes, stomatitis or sore mouth, numbness in the hands) were added into the other problems section of the scale by the researchers in line with the literature information. The severity of each symptom is assessed by numerical numbers from 0 to 10. A score of 0 indicates that there is no symptom, a score of 10 indicates that the symptom is felt very severely, and the severity of the symptom increases from 0 to 10.

Statistical analysis

Analysis of the research data was done by using the SPSS 22 statistical program. Characteristics of the patient, factors affecting their self-efficacy, and symptoms presented as percentages and averages. The Mann–Whitney U test was used for the comparisons of the data (gender, surgical treatment status, etc.) that did not show normal distribution, and the Kruskal–Wallis analysis of variance was used for the comparisons of the three groups (smoking, using alcohol

status, income status, etc.). Statistical significance level was accepted as $p < 0.05$.

Results

The mean age of cancer patients participating in the study was 60.10 ± 12.10 years; 53.2% ($n = 154$) were male, 89.4% ($n = 294$) were married, and 67.8% (223) were primary/secondary school graduates. In total, 59.3% ($n = 195$) of the patients stated that they did not smoke, 79.9% (263) did not use alcohol, 78.1% ($n = 257$) of them stated that their income was at a medium level, 79.6% ($n = 262$) were not working, and 97.3% ($n = 320$) had health insurance. At the same time, it was determined that the patients were diagnosed with cancer an average of 2.36 ± 2.65 years ago, 27.1% ($n = 89$) of the patients had lung cancer, 52% ($n = 171$) had surgery related to the diagnosis of cancer, and 43.2% ($n = 142$) received radiotherapy treatment (Table 1).

The mean BDI-CV self-efficacy scale score of the patients was 79.10 ± 17.55, which was above the moderate level. The mean ESAS pain score of the patients was 2.01 ± 2.57, the mean fatigue score 3.53 ± 2.81, the mean nausea score 1.33 ± 2.29, the mean depression score 1.92 ± 2.33, the mean anxiety score 2.00 ± 2.41, the mean drowsiness score 2.46 ± 2.78, the mean appetite score 2.57 ± 3.02, the mean score of feeling well-being 2.70 ± 2.49, the mean score of dyspnea 1.50 ± 2.50, the mean score of changes in the skin and nails 1.71 ± 2.62, the mean score of sores in the stomatitis or mouth sore 1.25 ± 2.14, and the mean score of numbness in the hands 1.72 ± 2.35 (Fig. 1). The highest mean score on ESAS of the patients was found in the symptom of fatigue (3.53 ± 2.81) and the lowest mean score in the symptom of mouth sore (1.25 ± 2.14) (Table 2).

A statistically significant difference was found between the genders of the patients participating in our study and ESAS score of shortness of breath and the score of numbness in the hands and feet ($p < 0.05$). The mean shortness of breath score of male patients was higher than female patients ($p = 0.042$). The mean scores of numbness symptoms in the hands were higher in female patients than those in male patients ($p < 0.01$) (Table 3).

In our study, a statistically significant difference was found between the education status of the patients and the BDI-CV self-efficacy scale mean score ($p < 0.05$). High school graduate patients' self-efficacy scores were higher than primary/secondary school graduate patients' ($p = 0.029$) (Table 3).

A statistically significant difference was found between the income status of the patients participating in our study and the BDI-CV self-efficacy scale mean score, fatigue, and sense of well-being symptom ESAS scores ($p < 0.05$). Patients with good income status had higher self-efficacy scores than patients with poor income status ($p = 0.004$).

Table 1 Characteristics of patients ($n = 329$)

	n	%
Age (Mean ± SD)	60.10 ± 12.10	
ECOG (Mean ± SD)	1.01 ± 1.03	
Time from diagnosis (year)	2.36 ± 2.65	
Gender		
Female	154	46.8
Male	175	53.2
Marital status		
Married	294	89.4
Single	35	10.6
Education status		
Primary/secondary school	223	67.8
High school	77	23.4
University and above	29	8.8
Smoking		
No	195	59.3
Yes	29	8.8
Quit smoking	105	31.9
Using alcohol		
No	263	79.9
Yes	22	6.7
Stopped using alcohol	44	13.4
Income status		
Poor	23	7.0
Medium	257	78.1
Good	49	14.9
Employment status		
Employed	67	20.4
Unemployed	262	79.6
Health insurance		
Yes	320	97.3
No	9	2.7
Cancer type		
Lungs	89	27.1
Breast	83	25.2
Gastrointestinal	78	23.7
Gynecological	21	6.4
Others (urinary system, etc.)	58	17.6
Surgical treatment		
Yes	171	52.0
No	158	48.0
Receiving radiotherapy treatment		
Yes	142	43.2
No	187	56.8

Mean ± SD Mean ± Standard deviation

Patients with low income status had higher ESAS fatigue symptom scores than patients with good income status ($p = 0.021$). Patients with good income status had a higher feeling of well-being than patients with low income status ($p = 0.039$) (Table 3).

A statistically significant difference was found between the working status of the patients participating in our study and the symptoms of ESAS fatigue, anxiety, drowsiness,

appetite, and sense of well-being ($p < 0.05$). Fatigue, anxiety, drowsiness, appetite, and sense of well-being symptoms were worse in non-working patients compared to working patients ($p < 0.01$, $p = 0.048$, $p = 0.033$, $p = 0.002$, $p = 0.013$, respectively) (Table 3).

In our study, a statistically significant difference was found between the smoking status of the patients and the BDI-CV self-efficacy scale mean score, ESAS fatigue, sense of well-being, and shortness of breath symptoms ($p < 0.05$). Patients who quit smoking had higher self-efficacy scores (84.18 ± 15.06) than patients who did not smoke (6.79 ± 17.48) ($p = 0.003$). Fatigue symptoms were worse in smokers than in non-smokers and ex-smokers ($p = 0.002$). The feeling of well-being score was worse in smokers than in patients who quit smoking ($p = 0.005$). The symptoms of shortness of breath were worse in patients who quit smoking compared to patients who did not smoke ($p = 0.006$) (Table 3).

In our study, a statistically significant difference was found between the alcohol use status of the patients and the symptoms of ESAS shortness of breath ($p < 0.05$). The symptoms of shortness of breath were worse in patients who stopped using alcohol (81.70 ± 15.39) compared to patients who did not use alcohol (5.09 ± 20.51) ($p = 0.021$) (Table 3).

A statistically significant difference was found between the patients who participated in our study and the ESAS score of pain and numbness symptoms in the hands ($p < 0.05$). While the pain symptom of the patients who did not have surgery was worse than the patients who had surgery ($p = 0.041$), the numbness symptom of the hands was worse in the patients who had surgery compared to the patients who did not have surgery ($p < 0.01$) (Table 3).

In this study, a statistically negative correlation was found between BDI-CV self-efficacy score and ESAS pain, fatigue, nausea, depression, anxiety, drowsiness, appetite, sense of well-being, shortness of breath, skin and nail changes, and stomatitis or sore mouth. As the patients' BDI-CV self-efficacy scores increased, their symptoms decreased (Table 4).

A statistically positive correlation was found between age and ESAS depression, appetite, and shortness of breath symptoms. As the mean age of the patients increased, the symptoms of depression, appetite, and shortness of breath increased (Table 4).

In our study, a statistically significant positive correlation was found between the ECOG performance scores of the patients and ESAS pain, fatigue, nausea, depression, anxiety, drowsiness, appetite, sense of well-being, shortness of breath, skin and nail changes, and stomatitis or sore mouth symptoms. As the ECOG performance scores of the patients increased, their symptoms also increased (Table 4).

In this study, a statistically significant positive correlation was found between time from diagnosis and the symptoms of sore mouth and numbness in the hands. As the time from diagnosis increased, the symptoms of sore in the mouth and numbness in the hands also increased (Table 4).

Discussion

Cancer is a life-threatening, difficult, and complex disease. Cancer patients are faced with many symptoms during and after treatment. These symptoms negatively affect the patients' life quality, reduce their self-efficacy perceptions, and impair their compliance with treatment. Therefore; it is very important to determine the degree of symptoms experienced by cancer patients, to determine how much they disturb the patients, and to evaluate their self-efficacy in coping with these symptoms [4, 8].

In our study, the mean BDI-CV self-efficacy score of the patients was found to be 79.10 ± 17.55, above the moderate level. In a randomized controlled trial evaluating training designed to strengthen self-efficacy and symptom control in coping with chemotherapy-related symptoms, while the mean BDI-CV self-efficacy score of the patients in the experimental group was 78.1 ± 13.2, the mean BDI-CV self-efficacy score of the patients in the control group was found to be 80.90 ± 12.10. In this research, it was observed that there was a positive increase in the total score of CIS-CV after the training in the experimental group, and the mean scores of all sub-symptoms of ESAS decreased positively and the difference between the scores was statistically significant [13]. In studies conducted with breast cancer patients, the self-efficacy level of patients was found to be moderate [14, 15]. In another study conducted with patients with gastric and colorectal cancer, the self-efficacy level of the patients was found to be moderate [16]. This situation can be explained by the diagnosis and treatment received by cancer patients and the severity of the symptoms they experience.

In our study, it was determined that the highest mean score of ESAS of the patients was in the symptom of fatigue. In studies conducted with cancer patients receiving chemotherapy, the most intense symptom experienced by patients was found to be fatigue [13, 17, 18]. In another study conducted with palliative care patients, it was determined that the most common symptoms felt by patients on the first day of hospitalization were fatigue, loss of appetite, and not feeling well [19]. It is seen that the results of our study are similar to the literature. It was determined that the most severe symptom experienced by the patients was fatigue. Patients also experience fatigue as a result of many symptoms such as loss of appetite and insomnia. For this reason, it is thought that most of the patients experience the symptom of fatigue more severely as a common problem.

While the symptoms of dyspnea were worse in male patients who participated in our study compared to female patients, hand numbness symptoms were worse in female
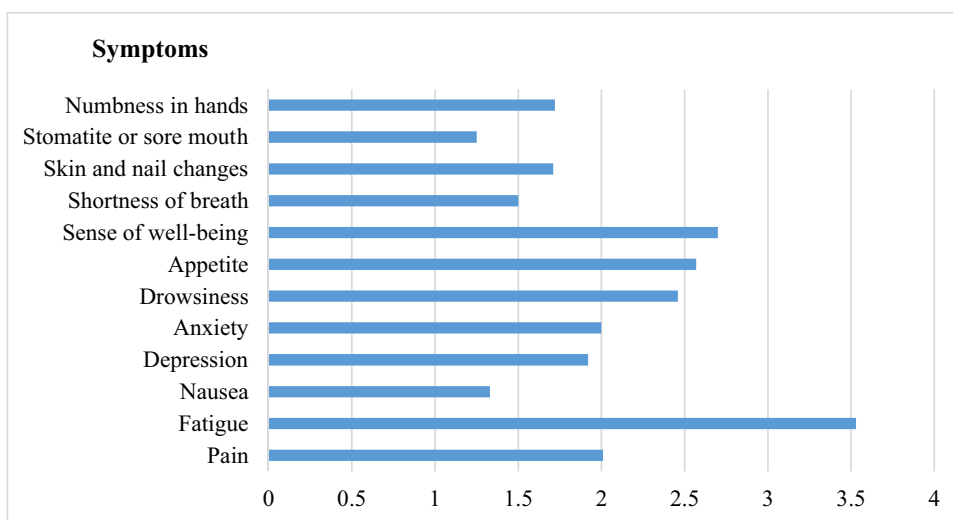
Fig. 1 ESAS mean scores

Table 2 Distribution of patients' CBI-SV and ESAS mean scores (n = 329)

	Ort. ± SD	Median	Minimum	Maximum
CBI-SV	79.10 ± 17.55	81.00	12.00	108.00
ESAS				
Pain	2.01 ± 2.57	1.00	0.00	10.00
Fatigue	3.53 ± 2.81	3.00	0.00	10.00
Nausea	1.33 ± 2.29	0.00	0.00	10.00
Depression	1.92 ± 2.33	1.00	0.00	10.00
Anxiety	2.00 ± 2.41	1.00	0.00	10.00
Drowsiness	2.46 ± 2.78	1.00	0.00	10.00
Appetite	2.57 ± 3.02	1.00	0.00	10.00
Sense of well-being	2.70 ± 2.49	2.00	0.00	10.00
Shortness of breath	1.50 ± 2.50	0.00	0.00	10.00
Skin and nail changes	1.71 ± 2.62	0.00	0.00	10.00
Stomatitis or sore mouth	1.25 ± 2.14	0.00	0.00	10.00
Numbness in hands	1.72 ± 2.35	0.00	0.00	10.00

Mean ± SD Mean ± Standard deviation

CBI-SV Cancer Behavior Inventory-Short Version, *ESAS* Edmonton Symptom Assessment Scale

patients than those in male patients. In a study conducted with colorectal cancer patients receiving chemotherapy, it was found that the symptoms of female patients were more severe [10]. It is an expected result that most of the male patients in our study experienced the symptom of dyspnea, since they were diagnosed with lung cancer. At the same time, female patients had worse symptoms of numbness in the hands, and that might be explained by the fact that women feel this symptom more because they are more active in housework.

High school graduate patients participating in our study had better self-efficacy scores than primary/secondary school graduates. In a study conducted in patients with breast cancer, it was found that the physical symptoms of secondary school graduates were higher and the attitudes of maintaining a positive attitude and reducing stress were more inadequate [15]. Self-efficacy, which is defined as an individual's belief that he or she can successfully perform the behavior aimed at improving his or her health, is a feature that can be developed with training. In this context, in our study, it is thought that as the education level of the patients increases, the self-efficacy levels of the individuals also increase.

In our study, patients with good income had better self-efficacy scores than patients with low income. Fatigue symptoms were worse in patients with poor income compared to those in patients with good income status. In a study conducted in patients with breast cancer, no significant difference was found between the self-efficacy scores of patients and their income, but their quality of life was found to be affected by income status [15]. This situation might be explained by the fact that individuals with a good income can afford the treatment and self-care costs and receive treatment in better facilities, thus positively affecting their self-efficacy.

In our study, patients who quit smoking had better self-efficacy scores than non-smokers. Fatigue symptoms of smokers were worse compared to non-smokers and ex-smokers; symptoms of well-being of smokers were worse compared to patients who quit smoking, and also the symptoms of dyspnea were worse in patients who quit smoking compared to those in non-smokers. At the same time, the symptoms of dyspnea were worse in patients who stopped

Table 3 Comparison of some characteristics of patients with CBI-SV and ESAS (n = 329)

Characteristics of patients	CBI-SV Mean±SD	Pain Mean±SD	Fatigue Mean±SD	Nausea Mean±SD	Depression Mean±SD	Anxiety Mean±SD	Drowsiness Mean±SD	Appetite Mean±SD	Sense of well-being Mean±SD	Shortness of breath Mean±SD	Skin and nail changes Mean±SD	Stomatitis or sore mouth Mean±SD	Numbness in hands Mean±SD
Gender													
Female	79.94±18.81	1.92±2.50	3.65±2.82	1.18±2.17	2.01±2.36	2.09±2.42	2.67±2.60	2.45±2.88	2.67±2.60	1.27±2.38	1.90±2.90	1.38±2.32	2.25±2.63
Male	78.36±16.37	2.09±2.64	3.43±2.81	1.47±2.39	1.85±2.30	1.93±2.40	2.27±2.78	2.68±3.15	2.73±2.39	1.70±2.59	1.55±2.35	1.13±1.97	1.26±1.97
p*	p=0.194	p=0.664	p=0.512	p=0.198	p=0.620	p=0.478	p=0.138	p=0.605	p=0.605	p=0.042	p=0.731	p=0.546	p<0.01
Education status													
Primary/secondary school	77.30±18.30	2.06±2.59	3.67±2.89	1.44±2.37	2.00±2.43	1.99±2.47	2.58±2.83	2.80±3.07	2.72±2.55	1.63±2.60	1.86±2.72	1.42±2.29	1.80±2.46
High school	83.42±15.30	1.72±2.33	3.05±2.52	1.09±2.08	1.76±2.03	2.01±2.58	2.14±2.58	2.03±2.75	2.37±2.11	1.38±2.33	1.18±2.16	0.86±1.66	1.45±1.94
University and above	81.68±15.17	2.41±3.06	3.76±2.89	1.17±2.23	1.69±2.28	2.07±2.57	2.31±2.82	2.24±3.20	3.41±2.82	0.83±2.00	1.97±2.86	0.90±1.95	1.83±2.52
p**	p=0.029	p=0.644	p=0.279	p=0.492	p=0.669	p=0.930	p=0.550	p=0.172	p=0.272	p=0.195	p=0.140	p=0.084	p=0.790
Income status													
Poor	71.47±21.24	2.65±3.17	4.83±2.91	2.04±2.88	3.00±3.33	3.48±3.48	3.22±3.21	3.00±3.39	3.87±2.52	2.13±3.19	2.00±2.54	1.09±1.70	1.52±2.15
Medium	78.64±17.05	1.95±2.51	3.55±2.77	1.20±2.12	1.87±2.27	1.89±2.32	2.51±2.52	2.58±2.98	2.65±2.48	1.52±2.52	1.71±2.64	1.30±2.20	1.72±2.35
Good	85.12±16.77	2.04±2.61	2.84±2.83	1.69±2.76	1.69±1.97	1.90±2.09	1.82±1.94	2.37±3.09	2.39±2.42	1.08±1.94	1.61±2.59	1.04±2.00	1.82±2.48
p**	p=0.004	p=0.662	p=0.021	p=0.368	p=0.362	p=0.118	p=0.195	p=0.706	p=0.039	p=0.548	p=0.551	p=0.797	p=0.954
Employment status													
Employed	82.17±18.31	1.52±2.19	2.46±2.49	0.93±1.88	1.24±1.91	1.43±2.06	1.76±2.42	1.60±2.55	2.10±2.55	1.12±1.89	1.00±1.56	1.18±2.00	1.45±1.92
Unemployed	78.32±17.29	2.14±2.65	3.81±2.83	1.44±2.38	2.10±2.40	2.15±2.47	2.63±2.85	2.82±3.08	2.85±2.45	1.60±2.62	1.90±2.80	1.26±2.18	1.79±2.45
p*	p=0.093	p=0.092	p<0.01	p=0.105	p=0.013	p=0.048	p=0.033	p=0.002	p=0.013	p=0.587	p=0.144	p=0.815	p=0.570
Smoking													
No	76.79±17.48	2.66±3.45	5.31±2.77	2.24±2.84	2.72±2.80	3.10±3.17	2.69±2.94	3.41±3.53	3.79±2.36	2.52±3.37	2.28±2.77	1.90±2.41	1.59±2.09
Yes	76.71±18.29	1.79±2.29	3.29±2.70	1.15±2.06	1.98±2.28	1.99±2.30	2.45±2.71	2.37±2.76	2.76±2.45	1.13±2.20	1.65±2.62	1.33±2.20	1.71±2.41
Quit smoking	84.18±15.06	2.25±2.76	3.50±2.87	1.43±2.48	1.59±2.24	1.72±2.32	2.40±2.91	2.72±3.31	2.28±2.51	1.90±2.62	1.69±2.59	0.91±1.90	1.77±2.33
p**	p=0.003	p=0.651	p=0.002	p=0.170	p=0.072	p=0.085	p=0.729	p=0.492	p=0.005	p=0.006	p=0.325	p=0.069	p=0.868
Using alcohol													
No	75.09±20.51	3.00±3.51	4.95±3.18	2.32±3.51	2.18±2.82	2.55±3.03	1.55±2.44	3.86±3.72	3.36±2.77	2.36±3.21	1.77±2.91	1.32±2.23	1.23±1.92
Yes	79.00±17.62	1.83±2.40	3.46±2.76	1.25±2.15	2.00±2.33	2.03±2.44	2.60±2.82	2.46±2.92	2.71±2.48	1.33±2.39	1.64±2.61	1.24±2.12	1.80±2.41
Stopped using alcohol	81.70±15.39	2.61±2.89	3.27±2.83	1.34±2.34	1.32±2.02	1.57±1.77	2.02±2.67	2.59±3.18	2.27±2.37	2.07±2.62	2.11±2.57	1.23±2.27	1.48±2.20
p**	p=0.560	p=0.180	p=0.060	p=0.744	p=0.230	p=0.649	p=0.107	p=0.213	p=0.271	p=0.021	p=0.274	p=0.997	p=0.303
Surgical treatment													
Yes	80.02±18.92	1.79±2.53	3.55±2.64	1.34±2.42	1.89±2.41	2.06±2.50	2.37±2.64	2.53±3.00	2.56±2.56	1.44±2.61	1.98±2.92	1.22±2.15	2.20±2.62
No	78.10±15.93	2.25±2.61	3.51±2.70	1.33±2.15	1.96±2.25	1.94±2.31	2.55±2.94	2.63±3.06	2.85±2.41	1.56±2.38	1.42±2.23	1.27±2.13	1.20±1.90
p*	p=0.077	p=0.041	p=0.985	p=0.432	p=0.442	p=0.956	p=0.753	p=0.772	p=0.168	p=0.172	p=0.245	p=0.519	p<0.01

Mean ± SD Mean ± Standard deviation, * Mann–Whitney U, ** Kruskal–Wallis analysis of variance, *CBI-SV* Cancer Behavior Inventory-Short Version, *ESAS* Edmonton Symptom Assessment Scale

Table 4 Comparison of the relationship between the ESAS, CBI-SV, and the other characteristics of patients (n=329)

ESAS	CBI-SV	Age	ECOG	Time from diagnosis
Pain	*r= − 0.040 p<0.001	*r= − 0.028 p=0.612	*r=0.232 p<0.001	*r= − 0.024 p=0.660
Fatigue	*r= − 0.087 p<0.001	*r=0.025 p=0.658	*r=0.315 p<0.001	*r= − 0.016 p=0.774
Nausea	*r= − 0.222 p<0.001	*r=0.051 p=0.356	*r=0.183 p=0.001	*r=0.007 p=0.893
Depression	*r= − 0.402 p<0.001	*r=0.142 p=0.010	*r=0.253 p<0.001	*r=0.000 p=0.993
Anxiety	*r= − 0.301 p<0.001	*r=0.032 p=0.567	*r=0.219 p<0.001	*r= − 0.040 p=0.473
Drowsiness	*r= − 0.274 p<0.001	*r=0.095 p=0.086	*r=0.302 p<0.001	*r=0.083 p=0.133
Appetite	*r= − 0.408 p<0.001	*r=0.130 p=0.019	*r=0.329 p<0.001	*r= − 0.040 p=0.470
Sense of well-being	*r= − 0.466 p<0.001	*r=0.037 p=0.503	*r=0.277 p<0.001	*r= − 0.106 p=0.054
Shortness of breath	*r= − 0.137 p=0.013	*r=0.146 p=0.008	*r=0.195 p<0.001	*r=0.022 p=0.686
Skin and nail changes	*r= − 0.184 p=0.001	*r=0.044 p=0.426	*r=0.190 p=0.001	*r=0.083 p=0.131
Stomatitis or sore mouth	*r= − 0.242 p<0.001	*r=0.077 p=0.164	*r=0.222 p<0.001	*r=0.181 p=0.001
Numbness in hands	*r= − 0.067 p=0.226	*r= − 0.008 p=0.878	*r=0.020 p=0.724	*r=0.128 p=0.020

*Spearman correlation, *CBI-SV* Cancer Behavior Inventory-Short Version, *ESAS* Edmonton Symptom Assessment Scale

using alcohol in our study compared to patients who did not use alcohol. Smoking and drinking alcohol are very harmful habits that cause cancer and its progression. The fact that patients who continued these harmful habits in our study had worse symptoms explains this situation. At the same time, the better self-efficacy scores of the patients who quit smoking in our study and the fact that individuals take important initiatives such as getting rid of harmful habits can be explained by the "belief that individuals can successfully perform the behavior aimed at improving their health," which is also included in the definition of self-efficacy. Studies emphasize that psychoeducational interventions applied to individuals who use cigarettes and alcohol are effective on self-efficacy [10, 20].

As the self-efficacy scores of the patients participating in our study increased, the severity of the symptoms they experienced decreased. In a study conducted with colorectal cancer patients receiving chemotherapy, it was found that the severity of their symptoms decreased as the patients' self-efficacy scores increased [21]. Self-efficacy is a feature that supports behaviors aimed at improving the health of individuals. This might be explained by the fact that individuals with increased self-efficacy make more efforts to protect and improve their health, reducing the severity of the symptoms experienced and feeling better.

In our study, as the mean age of the patients increased, the symptoms of sadness, loss of appetite, and shortness of breath worsened. In a study evaluating the symptoms of cancer patients, it was determined that both psychological and general well-being worsened as the age of the patients increased [22]. In a study conducted in colorectal cancer patients receiving chemotherapy, it was found that the symptoms of patients over the age of 60 were more severe [21]. This situation might be explained by the deterioration in the body's defense mechanism against health problems and health problems added with increasing age.

In this study, non-working patients had worse symptoms of fatigue, anxiety, insomnia, anorexia, and well-being compared with working patients. At the same time, it has been shown that as the performance scores of cancer patients in this study worsened, the severity of the symptoms also increased. In a study conducted with advanced cancer patients, it was found that the physical condition of the patients affected the patients' self-efficacy. As the performance status of the patients decreased, their self-efficacy also decreased [9]. In another study conducted with outpatient chemotherapy patients, it was stated that especially female patients may experience a lower risk of self-efficacy as their physical functionality decreases [23]. This situation may be explained by the fact that cancer patients who

experience fewer symptoms can perform their physical functions, work, perform their duties, and thus have better self-efficacy scores as their performance improves.

In our study, as the time taken for patients to be diagnosed increased, the symptoms of mouth sores and numbness in the hands worsened. At the same time, in our study, patients who did not have surgery had worse pain symptoms than patients who underwent surgery and the numbness symptom in the hands was worse in the patients who had surgery compared to the patients who did not. In another study, in which the symptoms of cancer patients were evaluated, it was found that as the time from diagnosis of the patients increased, the general well-being of the patients was better [22]. As the time taken for patients to be diagnosed increases, the process of living with the disease and the duration of exposure to treatment opportunities and treatment side effects increase in this process. The increase in the severity of some symptoms as the time taken for patients to be diagnosed increases in our study might explain this situation. At the same time, the severity of symptoms is reduced with treatment opportunities. The decrease in the severity of pain after operation of the patients who experience pain might explain this situation.

Conclusion

It was found that the self-efficacy score of the patients was above the moderate level, the most intense symptom experienced by the patients was fatigue, and the severity of the symptoms decreased as the self-efficacy level of the patients increased. Some of the symptoms are lower in patients with a good income, who are working, who are not smoking, and who are not using alcohol. Also it was determined that the self-efficacy levels of the patients with good income and who quit smoking were higher. In line with these results, the symptoms, self-efficacy perceptions, and influencing factors of cancer patients should be evaluated by nurses at regular intervals. At the same time, it can be recommended to provide counseling, education, and training services that teach cancer patients how to cope with symptoms in order to improve their self-efficacy perceptions.

Limitation

These research data can be generalized only to patients who were treated in the institution where the research was conducted, since it was applied to patients who applied to the Medical Oncology Clinic of the Faculty of Medicine between the dates of the study, who met the inclusion criteria, and who volunteered to do so.

Declarations

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