



ORIGINAL PAPER

Surgery experiences of patients with hematologic cancer, individual applications for the symptoms due to chemotherapy and determination of the anxiety levels

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ABSTRACT

Introduction and aim. The aim of the study was to determine the surgical experiences of patients with hematologic cancer, their anxiety levels, and their individual practices regarding the symptoms they experience.

Material and methods. The study was conducted by face-to-face interviews with 74 patients followed up in a hematology clinic. The “Patient information form” and “Beck Anxiety Scale” were administered to the patients before chemotherapy, and the “Questionnaire Form Including Patients Practices for Symptoms” was administered after chemotherapy.

Results. The mean age of the participants was 63.76 ± 15.1 years, 47.3% were female, 47.3% were diagnosed with lymphoma, 67.6% had undergone surgery, and 32% received education. The mean Beck Anxiety Scale score was 11.36 ± 7.99 and was considered mild anxiety. A significant difference was observed between education and employment status and postoperative education status, gender and hair loss, employment status and anorexia, scale score and employment status, and the effect of COVID-19 on chemotherapy ($p < 0.05$).

Conclusion. It was determined that patients with hematological cancer had a low levels of knowledge about surgical procedures and they did not perform any negative practice due to chemotherapy. Their anxiety levels were mild and the pandemic process was effective on anxiety.

Keywords. anxiety, chemotherapy, hematological cancer, surgical experience

Introduction

Cancer is “a disease in which cells multiply uncontrollably and rapidly, disrupting the normal functioning of the body.”¹ Despite many inspiring advances in medicine, cancers affect human health biologically, physically and psychologically, with high mortality rates. According to the 2018 data from World Health Organization, cancer is the second deadliest disease in the world and is the cause of death for one in six people.² Although mortality rates are low for some types of cancer, overall high mortality rates can be a source of fear and despair for patients and their relatives. Two studies of people with

hematologic cancers found that young people and older adults were more prone to depression.³ Hematological cancers are cancers that start in the tissues that make up the blood or the cells that make up the immune system. Hematological cancers include leukemia, lymphoma, multiple myeloma, and their subtypes.⁴ In 2018, hematological cancers ranked second among cancer-related deaths in Turkey with a ratio of 8.2%.⁵

Anxiety is “fear and uneasiness caused by undefinable or unknown things.”⁶ According to definition, cancer is a disease that affects the diagnosed individual and his/her family throughout the entire treatment

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process as an unknown condition.⁷ Like other patients diagnosed, the majority of patients with hematological cancer experience anxiety. Therefore, anxiety complicates the adherence to treatment and prolongs hospitalization.⁸ Surgery, chemotherapy and radiotherapy are used in cancer treatment. Immunotherapy, hormone therapy and biological treatment methods are less preferred.¹ Chemotherapy, which can be combined with other treatment methods, is a method that uses drugs prevent cancer cells from multiplying rapidly. While chemotherapy drugs prevent cancer cells from growing, they can also damage human cells. The most common side effects of chemotherapy include nausea, loss of appetite, weight loss, anemia, wounds, pain, fatigue, sleeping disorders and hair loss.⁹ Patients who want to reduce side effects and complete the treatment with minimal damage resort to individual methods. When the alternative method preferences of patients undergoing chemotherapy were investigated, it was found that 19.7% used phytotherapy and 19.3% used vitamins.¹⁰ In a similar study, it was observed that half of patients diagnosed with Myeloma preferred complementary and alternative medicine methods in addition to medical treatment.¹¹

Although access to information has become easier with the advancement of technology, the resulting information pollution has made it difficult to access accurate information. Patients diagnosed with cancer can resort to individual and complementary practices in addition to medical treatments.

Aim

Based on reasons such as the scarcity of studies and the lack of sufficient evidence-based data on this subject, it was aimed to determine the surgical experiences of patients with hematologic cancer, their anxiety levels, and their practices for the symptoms that occur.

Material and methods

All patients gave their informed consent for inclusion before they participated in the study. The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of Sakarya University (Document Date-Number: 20/10/2020-E.9543) and written permission was obtained from the institution where the study was conducted.

This descriptive study was conducted to determine the surgical experiences of patients followed in the hematology clinic of a training and research hospital, their anxiety levels before chemotherapy, and their practices for the symptoms experienced by patients after chemotherapy. Data were collected using face-to-face interview technique between November 16, 2020 and May 17, 2021 after ethics committee approval and

institutional permissions were obtained. The scope of the study consisted of 77 patients who received inpatient treatment in a hematology clinic between the specified dates. It was aimed to reach all patients who applied to the hematology clinic and met the inclusion criteria without sampling, and the study was completed with 74 people. Of the three patients receiving chemotherapy, one was excluded because he had a major psychiatric diagnosis, the other because he had communication problems, and the third because he refused to participate in the study.

In this two-stage study, “Patient Information Form” and “Beck Anxiety Scale” were administered to the patients before chemotherapy, and “Questionnaire Form Including Patients’ Applications for Their Symptoms”, which was created by the researchers using literature information, was administered after chemotherapy.^{7,11-13} The questions included questions about the surgical history of the patients. In the Questionnaire for Patients’ Applications for Their Symptoms, patients’ hematologic diseases, type of chemotherapy they received, duration and information about chemotherapy were questioned.

The Beck Anxiety Scale (BAS) developed by Beck et al. in 1998, is a Likert-type scale consisting of 21 items scored between 0-3, used for determining the severity of anxiety experienced by individuals. Scale values are scored between 0-63 and higher scores indicate more severe anxiety. Scores between 0-7 are interpreted as “no anxiety symptoms”, scores between 8-15 as “mild anxiety”, scores between 16-25 as “moderate anxiety”, and scores between 26-63 as “severe anxiety”. Ulusoy et al. conducted the Turkish validity and reliability study of the scale in 1998 and calculated Cronbach’s alpha value as 0.93. Permission to use the scale in this study was obtained from Hüsnü Erkmen via e-mail.¹⁴

Data were evaluated using SPSS 25.0 (Statistical Package for the Social Sciences). Study data were evaluated by frequency distribution (number, percentage) for categorical variables and descriptive statistics (mean, standard deviation) for numerical variables. Independent sample t-test, One Way ANOVA, Levene Test, Bonferroni or Tamhane’s T2, Chi-squared Test, Pearson Correlation Analysis were also used. A p-value of $p < 0.05$ was accepted for significance.

Results

The mean age of chemotherapy patients was 63.76 ± 15.1 years, 47.3% were female, 92.2% were married, 94.6% had children, 78.4% were primary school graduates and 39.2% were housewives. 81.1% lived in the district for the longest time, 97.3% had an income equal to their expenses, 25.7% had hypertension, 77% did not smoke, and 95.9% did not drink alcohol (Table 1).

Table 1. Examination of descriptive features and operative conditions

		n	%
Age	(mean±SD)	63.76±15.1	
Gender	Male	39	52.7
	Female	35	47.3
Marital status	Married	69	93.2
	Single	5	6.8
Child	Yes	70	94.6
	No	4	5.4
Education	Primary school	58	78.4
	High school	10	13.5
	Associate-bachelor	6	8.1
Occupation	Housewife	29	39.2
	Employed	23	31.1
	Retired	20	27
	Other	2	2.7
Place of Longest Residence	District	60	81.1
	Province	12	16.2
	Village-town	2	2.7
Income Situation	Income equals expenses	72	97.3
	Income less than expenses	2	2.7
Disease	Absent	33	44.6
	Hypertension (HT)	19	25.7
	Diabetes (DM)	11	14.9
	DM+HT	10	13.5
	Other	1	1.4
Current Medical Diagnosis	Lymphoma	35	47.3
	Leukemia	20	27
	MM	17	23
	MDS	2	2.7
Had Operation Before	"Yes I did"	50	67.6
	"No. I did not"	24	32.4
Operations had	Urology-gynecology	16	32
	Other	13	26
	Gastrointestinal system surgery	8	16
	Brain-nerve surgery	7	14
Being Informed During Operation	KVC	6	12
	"No. not informed"	25	50
	"Yes. by physician and nurse"	19	38
Pre-operative Education Status	"Yes. by a physician"	6	12
	"No. I had not"	34	68
Surgery Experience Satisfaction Level (VAS; 0–10) (mean±SD)	"Yes I had"	16	32
	Other	33	67.3
The most worrying situation for the patient during the operation	Fear of not being able to wake up	11	22.4
	Not being informed	4	8.2
	Fear of telling secrets	1	2

The proportion of participants with a medical diagnosis of lymphoma was 47.3%. When the previous hospitalization and surgical experiences of chemotherapy patients were questioned, 91.9% had been hospitalized in the past, 67.6% had undergone surgery, and the rate of urology/gynecology surgeries (32%) was high among these surgeries. Again, 38% of these patients stated that they were

informed during the previous surgery and 32% stated that they received trainings such as exercise etc. after surgery. The mean score of satisfaction with the surgical experience was 6.12±2.05, which is moderate. 22.4% of the participants stated that the thing that worried them the most during surgery was the fear of not waking up (Table 1).

Table 2. Postoperative complaints and ways of coping (n=74)

		n	%
Post-operative complaints	Pain	35	70
	Physical problem	22	44
	Fatigue	7	14
	Loss of appetite	4	8
	Fever	1	2
	No complaints	4	8
	Weight loss	3	6
	Nausea, vomiting	3	6
	Constipation	2	4
	Sleep problems	2	4
	Diarrhea	1	2
	Respiratory problems	1	2
Fatigue	"I took time to rest during the day."	6	85.7
	"I restricted my daily activities."	1	12.5
Nausea-vomiting	"I used drugs."	2	100
	Other	14	63.6
Physical problems	"I did not do anything."	5	22.7
	"I paid attention to the choice of clothes."	3	13.6
Weight loss	Other	2	66.7
	"I ate my favorite foods."	1	33.3
Pain	"I used painkillers."	35	100
Fever	"I used antipyretics."	1	100
Constipation	Other	2	100
Diarrhea	Other	1	100
Respiratory problems	"I received oxygen."	1	100
Sleep problems	"I rested during the day."	2	100

After surgery, 70% of the patients reported feeling pain and 44% reported physical problems. 85.7% of the participants reported that they took time to rest during the day for fatigue-weakness, 22.7% of those with physical problems did nothing, 33.3% of those with weight loss ate their favorite foods, all patients with pain and high fever used painkillers and antipyretics, and in cases of constipation and diarrhea, they used non-drug methods (apricot juice, olive oil, etc.) (Table 2).

A correlation was found between education and employment status and postoperative training on breathing-cough, rotation-body exercises. Accordingly, the rate of receiving education about surgery was significantly higher in those with higher education level and those who were employed ($p<0.05$, Table 3).

85.1% of the participants stated that intravenous treatment (IV; intravenous) was the method of administration for the type of chemotherapy, 52.7% stated that

they were informed by the doctor and nurse, 43.2% stated that the question “What will be the result, will I recover?” was a worrying situation, 51.4% stated that COVID-19 did not affect chemotherapy. Complaints after chemotherapy; 51.4% felt tired and 97.3% of those who felt tired took time to rest during the day, 71.4% of those who had mouth sores after chemotherapy gargled, 64% of those who experienced nausea and vomiting after chemotherapy, 7% used medication, 60% of those who experienced hair loss after chemotherapy wore scarves and bonnets, 33.3% of those who lost weight after chemotherapy ate less and more frequently, 3% of those who experienced pain after chemotherapy used painkillers, It was determined that 60% of those with fever used antipyretics and monitored fever, 43.5% of those with constipation after chemotherapy used medication, 25% of those with diarrhea ate a fiber-free diet and drank two liters of fluid a day, 90% of those with anorexia ate little and often, 60% of those with respiratory problems took oxygen, and 95.5% of those with sleep problems after chemotherapy rested during the day.

Table 3. Examination of the correlation between demographical information and operative conditions, postoperative complaints, and methods of coping (n=74)^a

		Gender		Education status				Working situation					
		Female		Male		Primary school		High school		Employed		Unemployed	
		n	%	n	%	n	%	n	%	n	%	n	%
Had operation	Yes	27	77.1	23	59	41	70.7	9	56.3	15	65.2	35	68.6
	No	8	22.9	16	41	17	29.3	7	43.8	8	34.8	16	31.4
Test/p¹		2.779/0.096				1.193/0.275				0.084/0.772			
Got educated	Yes	8	29.6	8	34.8	10	24.4	6	66.7	9	60.0	7	20
	No	19	70.4	15	65.2	31	75.6	3	33.3	6	40.0	28	80
Test/p¹		0.152/0.697				6.062/0.022*				7.721/0.009*			
Surgery experience	Yes	5.89		6.39		6±2.09		6.67		6.47±2.07		5.97±2.05	
	No	±2.10		±1.99				±1.87					
Test/p²		-0.863/0.393				-0.883/0.382				0.781/0.439			
Beck Anxiety Scale	Yes	12.97		9.92		11.38		11.31		8.48±6.22		12.67±8.40	
	No	±7.72		±8.04		±7.82		±8.84					
Test/p²		1.659/0.101				0.027/0.978				-2.139/0.036*			
Medical diagnosis	Leukemia	9	25.7	11	28.2	16	27.6	4	25.0	8	34.8	12	23.5
	Lymphoma	16	45.7	19	48.7	26	44.8	9	56.3	10	43.5	25	49.0
	Mds	1	2.9	1	2.6	2	3.4	0	0.0	0	0.0	2	3.9
	Mm	9	25.7	8	20.5	14	24.1	3	18.8	5	21.7	12	23.5
Test/p		-				-				-			

^a 1 – Chi-square test, 2 – independent sample t-test, * – p<0.05

A significant difference was noted between gender and hair loss and between employment status and anorexia. Accordingly, the rate of hair loss was significantly higher in women than in men, and the rate of anorexia was significantly higher in non-working patients than in working patients (p<0.05, Table 4). Although there was no significant difference, 41.7% of patients

with 0 Rh-positive blood group and 48.4% of patients with A Rh-positive blood group were diagnosed with lymphoma. The mean BAS total score was 11.36±7.99 and was evaluated as mild anxiety. It was determined that 40.5% of the patients had low to no anxiety, 32.4% had mild anxiety, 21.6% had moderate anxiety and 5.4% had severe anxiety. BAS score showed a significant difference according to employment status. In other words, the BAS score of those who were not working was significantly higher than those who were working (p<0.05, Table 5). The difference between BAS score and the effect of COVID-19 on chemotherapy symptoms was found to be significant. Those who thought that COVID-19 prolonged the duration of chemotherapy had significantly higher BAS scores than those who did not think so, and those who experienced fatigue, mouth sores, pain, loss of appetite and constipation had significantly higher BAS scores than those who did not (p<0.05, Table 5). Anxiety scores for receiving chemotherapy during COVID-19 were significantly higher in those who thought “What will be the outcome?” compared to those who did not worry (p<0.05).

Table 4. Examination of the correlation between demographical information and post-chemotherapy complaints (n=74)^a

		Gender		Education status				Working status					
		Female		Male		Primary school		High school		Employed		Unemployed	
		n	%	n	%	n	%	n	%	n	%	n	%
Informed about chemotherapy	Physician	1	2.9	2	5.1	3	5.2	0	0	2	8.7	1	2
	Nurse	2	5.7	4	10.3	5	8.6	1	6.3	3	13	3	5.9
	Physician+nurse	18	51.4	21	53.8	27	46.6	12	75	13	56.5	26	51.0
No		14	40.0	12	30.8	23	39.7	3	18.8	5	21.7	21	41.2
Test/p¹		-				-				-			
Hair loss	Yes	8	22.9	2	5.1	8	13.8	2	12.5	2	8.7	8	15.7
	No	27	77.1	37	94.9	50	86.2	14	87.5	21	91.3	43	84.3
Test/p¹		4.961/0.040*				0.018/1.000				0.663/0.715			
Pain	Yes	12	34.3	8	20.5	16	27.6	4	25.0	5	21.7	15	29.4
	No	23	65.7	31	79.5	42	72.4	12	75.0	18	78.3	36	70.6
Test/p¹		1.774/0.183				0.043/1.000				0.473/0.492			
Anorexia	Yes	19	54.3	13	33.3	27	46.6	5	31.3	6	26.1	26	51.0
	No	16	45.7	26	66.7	31	53.4	11	68.8	17	73.9	25	49.0
Test/p¹		3.299/0.069				1.196/0.274				4.002/0.045*			

^a 1 – Chi-square test, * – p<0.05

When hematologic cancer patients were asked about their suggestions regarding the chemotherapy process and surgical process, some of the remarkable responses can be summarized as follows; “The information given to patients and their relatives should be improved and detailed, early diagnosis should be made, the chemotherapy process should be eased, access to the physician should be facilitated, and results should be obtained faster.”

Table 5. Examination of correlation between the variables and BAS score^a

		Beck Anxiety Scale		Test/p
		Ave	SD	
Had operations	Yes	11.9	6.96	0.830/0.409 ¹
	No	10.25	9.87	
How did COVID-19 affect chemotherapy?	"The process took longer"	16.86 [†]	11.82	3500/0.012 ^{*2}
	"We have been careful"	11.14	5.37	
	"We were afraid of the hospital/contamination"	9.57	4.89	
	"Did not affect"	8.92 [^]	5.80	
	Other	15.13	8.39	
Fatigue	Yes	13.26	8.1	2.153/0.035 ^{*1}
	No	9.36	7.45	
Mouth sores	Yes	18.43	6.7	2.551/0.013 ^{*1}
	No	10.63	7.78	
Hair loss	Yes	17.4	11.87	1.812/0.100 ¹
	No	10.42	6.86	
Pain	Yes	14.75	9.05	2.282/0.025 ^{*1}
	No	10.11	7.25	
Anorexia	Yes	13.94	8.44	2.505/0.015 ^{*1}
	No	9.4	7.11	
Weight loss	Yes	17.5	10.88	1.998/0.073 ¹
	No	10.41	7.08	
Constipation	Yes	14.67	10.5	2.123/0.042 ^{*1}
	No	9.78	5.95	
Respiratory problems	Yes	14.4	6.31	0.879/0.382 ¹
	No	11.14	8.09	

^a #, ^ – shows the differences between the means of the groups (#=highest percentage), 1 – independent sample t-test, 2 – one-way ANOVA test, 3 – Pearson correlation analysis, r – Pearson correlation coefficient, * – p<0.05

Discussion

Rates of hematologic cancers are increasing year by year. Various treatment methods are being developed to achieve positive results. All treatment methods cause anxiety in patients and affect treatment outcomes. In the study, most of the patients (91.9%) had been hospitalized before and more than half (67.6%) had undergone surgery. In a study by Buldan and Kurban, the rate of anxiety was found to be high in those who stayed in the hospital for 11 days or longer.¹⁵ The literature supporting our study shows that the duration of hospitalization and uncertainty in the treatment process significantly affect the lives of cancer patients and their families.

It was determined that more than one third of the patients with hematologic cancer were informed and trained during surgery, and these patients gave their surgical experience a moderate score out of ten (6.12±2.05). In addition, patients reported that their most common concern during surgery was "fear of not waking up". Similar to our study, Özşaker et al. found that more patients (43.9%) had undergone surgery before; 90% of the patients thought that the information provided during the process was sufficient; and 41.4% experienced "fear

of not waking up" after surgery.¹⁶ In another study, while the proportion of patients who received preoperative information was higher (68.6%), 40.2% of those who provided information were physicians, and similar to our study, 36.3% of patients received training on postoperative exercises.¹⁷ In South Korea, 91% of patients reported receiving preoperative education and counseling for gastric cancer surgery.¹⁸ The reasons for the lower rate of being informed in our study compared to other studies can be listed as the lack of patients who had undergone surgical intervention during the period when the study data were collected, and the inability of individuals to express information they forgot due to the questioning of their past surgical experiences.

Patients often experience pain and physical problems after surgery. In a study of 12,276 patients from all surgical disciplines, the most common postoperative complaints were nausea and vomiting, sore throat and hoarseness.¹⁹ In another study, postoperative pain, nausea and dry mouth were among the common complaints. In the same study, postoperative complaints were found to be more common in women than in men (p<0.05).²⁰ Another study reported that the most common complaint after urogynecology surgery was pain.²¹ In this study, the proportion of patients who underwent urology-gynecology surgery was high. The results in the literature are similar to the findings of our study; it is known that different complaints may come to the fore in patients depending on the type of surgery and the treatment methodology applied. The results in the literature are similar to the findings of our study; it is known that different complaints may come to the fore in patients depending on the type of operation and the treatment methodology applied.

More than half of the patients reported that they felt tired after chemotherapy and took time to rest during the day. It was observed that they did not have alternative practices to cope with other complaints. In a study by Sarıtaş and Büyükbayram, it was determined that patients felt fatigue, sadness and anxiety the most.⁷ In another study, 54.5% of the relatives of individuals receiving chemotherapy reported fatigue.²² This draws attention to the need for holistic evaluation of patients together with their families. Unlike the results of our study, Karakoç's study on oncology patients found that 31.5% of patients used complementary and alternative medicine methods during chemotherapy.¹¹ In Bıçaklı and Yılmaz's study, 19.7% of patients used phytotherapy, 19.3% used vitamins, and 47.6% used products or drugs without consulting a doctor-nurse-dietitian.¹⁰ Although it was determined that the patients did not use any alternative methods in our study, as the results of other studies in the literature show, the determination of alternative methods used by patients during the treatment process; their effects, side effects and contra-

indications should be closely monitored. Among the complaints seen after chemotherapy, the rate of anorexia in unemployed patients was significantly higher than in employed patients ($p=0.045$).

In a study conducted, fatigue, shortness of breath, insomnia, and loss of appetite were among the most common complaints in cancer diagnosis and treatment.²³ In another study, changes in the dietary habits of patients before and after cancer diagnosis were examined and an increase in healthy eating behaviors of patients was found after diagnosis.²⁴ No literature directly supporting or contradicting our study findings was found. In unemployed patients, it is thought that in addition to living introverted due to limited social activities, inability to access adequate and balanced food due to financial inadequacies may also be effective in the rate of anorexia.

According to the Beck Anxiety Scale, the anxiety levels of the patients were evaluated as “mild anxiety”. The rate of participants without anxiety was 40.5%. In a study, it was found that the majority of patients with hematological cancer experienced distress, and anxiety and depression levels increased as the level of distress increased.⁸ It is very important for healthcare professionals to monitor anxiety and depression in all cancer patients and to provide the necessary medical treatment and care.

In the BAS administered before chemotherapy, the anxiety score of those who were not working was significantly higher than those who were working ($p=0.036$). In contrast to our findings, Ustaalioglu et al. evaluated the presence of depression in patients receiving chemotherapy and found no significant relationship between employment status and depression.²⁵ In a study in which the findings were parallel to our findings, anxiety was found to be significantly higher ($p<0.001$) in the unemployed.²⁶ In unemployed individuals who experience uncertainty about the future, the diagnosis of a severe disease such as cancer, the onset of a challenging treatment process such as chemotherapy, and the socioeconomic difficulties of being unemployed may play a role in increasing the level of anxiety.

In the study, the BAS scores of those who thought that COVID-19 prolonged the chemotherapy process were significantly higher than those who thought that it did not. In a previous study, the rate of those who stated that they did not have difficulty in coping with their diseases during the pandemic period was 70.5%, while the rate of those who thought that delay in diagnosis-treatment would negatively affect their health status was 55%.²⁷ COVID-19 has had an impact on hematologic cancers as in other diseases and has negatively affected patients. It is reported that there were patients whose diagnosis was delayed due to the decrease in hospital admissions during the pandemic.²⁸ Health managers took

various measures during the pandemic to prevent and minimize this situation. Within the scope of these measures, the process of starting treatment was left to the doctor's decision.¹

Anxiety levels of those who thought “What will be the outcome?” while receiving chemotherapy were higher in those who received chemotherapy during the COVID-19 pandemic. The study supporting our findings was conducted by Amelia et al. and reported that 48.9% of cancer patients receiving chemotherapy experienced moderate stress during the COVID-19 period.²⁹ In a study conducted in Indonesia, three different cancer patients and their chemotherapy processes were examined; it was emphasized that the cases disrupted their chemotherapy and did not receive their treatment during the COVID-19 period.³⁰ The pandemic process, which has affected the whole world, has also negatively affected the chemotherapy process. The aim of nursing care should be to reduce anxiety, prevent complications, minimize loss of function, improve quality of life and maintain well-being in patients.³¹

In this study, surgical history, anxiety levels and individual practices during treatment were examined in patients receiving chemotherapy and the change in the covid-19 period was evaluated. We think that this study will contribute to improving the quality of patient care, raising the awareness of healthcare professionals working in clinics, performing necessary medical tests, asking adequate questions to patients and making patients aware of their wrong practices.

Conclusion

As a result, it was determined that patients with hematological cancer had low levels of information about the surgical processes, did not have alternative applications for chemotherapy and experienced mild anxiety.

In line with the results obtained from the study; It is thought that expressing the anxiety of the patients and eliminating the fears of the patients will positively affect the compliance with the chemotherapy process and the treatment. Healthcare professionals should be careful in this process, the subjects such as “hematological cancers, chemotherapy process” etc. should be well constructed and well-designed, randomized controlled studies with appropriate sample size should be conducted to contribute to the evidence-based literature.

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Declarations

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Author contributions

Conceptualization, G.Y. and D.A.; Methodology, G.Y. and D.A.; Software, G.Y. and D.A.; Validation, G.Y. and D.A.; Formal Analysis, G.Y. and D.A.; Investigation, G.Y. and D.A.; Resources, G.Y.; Data Curation, G.Y. and D.A.; Writing – Original Draft Preparation, G.Y. and D.A.; Writing – Review & Editing, G.Y. and D.A.; Visualization, G.Y. and D.A.; Supervision, D.A.; Project Administration, G.Y. and D.A.

Conflicts of interest

The authors declare no competing interests.

Data availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics approval

The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of Sakarya University (Document Date-Number: 20/10/2020-E.9543) and written permission was obtained from the institution where the study was conducted.

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