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Research Article

Symptom Clustering and Its Effect on Functional Status in Lymphoma Patients

Merve Gözde Sezgin[1], Hicran Bektaş[2]

[1]Akdeniz University Hospital, Antalya, Turkey
[2]Department of Internal Medicine Nursing, Akdeniz University Faculty of Nursing, Antalya, Turkey

ORCID iDs of the authors: M.G.S. 0000-0001-9076-2735; H.B. 0000-0002-3356-3120.

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ABSTRACT

Aim: The study aimed to determine the effect of symptom clustering and its effect on functional status in patients with lymphoma.

Method: This descriptive study was conducted with 109 patients with lymphoma in the Hematology Clinic, Hematology Outpatient Clinic, and Chemotherapy Day Unit of a university hospital. Personal information form, Memorial Symptom Assessment Scale to assess symptoms, and the Functional Assessment of Cancer Therapy-Lymphoma to assess functional status were used in data collection. Frequency, percentage, arithmetic mean, significance test of difference between two means, Mann-Whitney U test, one-way analysis of variance, Kruskal Wallis analysis of variance, Pearson's correlation test, Cronbach's alpha internal consistency test, and cluster analysis were used to evaluate the data.

Results: According to the Memorial Symptom Assessment Scale, the most common psychological symptoms in these patients were sleep disturbance, feeling sad and worried; whereas, their physical symptoms were pain, nausea, and dry mouth. Based on the results of the Functional Assessment of Cancer Therapy-Lymphoma Scale, it was found that the functional lives of the patients were negatively affected due to pain, low energy, feeling sad, worrying about the deterioration of the condition, fatigue and pain in certain parts of the body. In the frequency and severity subscales of Memorial Symptom Assessment Scale, gastrointestinal system symptoms were collected more intensively in the first clusters. Physical and psychological symptoms were regularly distributed in the distress subscale.

Conclusion: As the symptom frequency, severity and distress subscales of Memorial Symptom Assessment Scale increased in lymphoma patients, their functional status deteriorated.

Keywords: Functional Assessment of Cancer Therapy-Lymphoma, lymphoma, Memorial Symptom Assessment Scale, nursing, symptom clustering

INTRODUCTION

Lymphoma is an important cause of morbidity and mortality around the world (Armitage, Gascoyne, Lunning, & Cavalli, 2017; Yarbro, Wujcik, & Gobel, 2011) and has been ranked as 8th in men and 10th in women with regard to the type of cancer (World Health Organization, 2020). Conditions such as type, stage, treatment type of the disease, and number of cycles are effective factors for the occurrence of symptoms (Bölükbaş & Kutlutürkan, 2014; Dodd, Miaskowski, & Paul, 2011; Ji, Bo, Xue, Weng, Gao, Dai, et al., 2017). Usually chemotherapy treatment is administered to lymphoma patients (Yarbro et al., 2011), which may lead to side effects such as anemia, thrombocytopenia, neutropenia, oral mucositis, pain, fatigue, sleep disorder, nausea, and vomiting (Hsu, Lin, Wu, Juan-Hou, Hwang, et al., 2017; Kwekkeboom, 2016; Wong, Cooper, Paul, Levine, Conley, Wright, et al., 2017). These symptoms interact with each other and form symptom clusters (Armitage et al., 2017; Bölükbaş & Kutlutürkan, 2014; Dodd, Miaskowski, & Paul, 2001; Ji et al., 2017; Kim, McGuire, Tulman, & Barsevick, 2005).

Symptom clusters lead to current symptoms being perceived more severely (Barsevick, 2007; Bölükbaş & Kutlutürkan, 2014; Dodd et al., 2011; Ji et al., 2017), and this makes it difficult to control the symptoms and adversely affects functional status (Bölükbaş & Kutlutürkan, 2014; Ji et al., 2017). When the literature is examined, there are studies on symptom clusters in the fields like lung and breast cancers, gynecological, gastrointestinal, and childhood cancers (Hsu et al., 2017; Kim, Kim, Lim, & Kim, 2018; Poon, Dennis, DeAngelis, Chung, Stinson, Zhang, et al. 2015; Wang,

Corresponding author: Merve Gözde Sezgin
E-mail: mervegozdesezgin@gmail.com

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Jacobs, Dewalt, Stern, Gross, & Hinds, 2018; Wang et al., 2018). Other than the study by Bölükbaş & Kutlutürkan (2014), no study was found on symptom clustering in patients with lymphoma in Turkey.

The presence of the multiple symptoms seen due to bone marrow depression negatively affects the quality of life, functional status, and emotional status of the patients (Dodd et al., 2011; Wong et al., 2017). Functional status is affected by situations such as health perception, biological and psychological disorders, and disease symptoms (Can, 2014). It is thought that patients diagnosed with lymphoma may experience difficulties in their functional status such as maintaining their daily life activities, self-care, and social and community roles. They may have problems with having life satisfaction, using effective coping mechanisms, and providing symptom management due to physical, emotional and social stresses experienced during the disease and treatment period. In addition, it is known that a number of symptoms are seen in patients with lymphoma due to the disease and treatment. However, there are not enough studies on which symptoms are seen together and the effects of these symptoms on functional status. It is necessary for the nurses to perform effective symptom management at this stage and evaluate the findings about the side effects rapidly and comprehensively in order to provide high quality care (Hindistan, Çilingir, Nural, & Aktaş-Gürsoy, 2012; Yıldırım, Tokem, Bozkurt, Fadıloğlu, Uyar, ve Uslu, 2011). Nurses have a vital role to play in determining, preventing, and controlling the symptoms at early stage, helping patients to be comfortable without any problems during this period, improving the functional status of the patients, and training them and their relatives.

The purpose of this study was to determine the effect of symptom clustering and its effect on functional status among patients with lymphoma receiving chemotherapy treatment. The study aimed to answer the following,

Research Questions

1. What are the symptoms experienced by lymphoma patients?
2. What are the symptom clusters of lymphoma patients?
3. What is the level of functional status of lymphoma patients?
4. Do symptoms experienced in lymphoma patients have any effect on functional status?

METHOD

Study Design

This study was conducted in a descriptive design.

Sample

The population of the study consisted of patients receiving treatment due to lymphoma diagnosis in the Hematology Clinic, the Hematology Outpatient Clinic & the Chemotherapy Day Unit of a university hospital located in city center of Antalya between May 2014 and June 2015. In the study, after obtaining permissions, power analysis of 80% was conducted with a confidence interval of 95% and significance level of 5%, and 109 patients meeting the inclusion criteria were included in the study. Patients who were 18 years and older, agreed to participate, underwent at least two cycles of chemotherapy, knew their diagnosis, and were able to verbally express their diagnosis were included in the sample.

Data Collection

Personal Information Form: It comprises 22 questions including the patients' characteristics regarding their medical condition (diagnosis, diagnosis time, etc.) and socio-demographic and disease-related characteristics (gender, age, etc.). Information about the disease characteristics of the patients was taken from the patient files.

Memorial Symptom Assessment Scale (MSAS): It is a scale developed by Portenoy et al. (1994) to evaluate frequency, difficulty, and severity of symptoms experienced by cancer patients within the last seven days. Turkish validity and reliability study of the scale was conducted by Yıldırım et al. (2011) and it was found that the Cronbach's alpha coefficient was 0.84, and the correlation between the items was strong. There are a total of 32 symptoms and two parts assessing psychological and physical symptoms in the scale in terms of frequency, severity, and distress. As the scores increase in MSAS, frequency, severity, and distress of the symptoms experienced increase (Yıldırım et al., 2011).

Functional Assessment of Cancer Therapy – Lymphoma (FACT-Lym): It is a functional condition assessment scale developed by Cella et al. (2005) and used widely in cancer patients all over the world (Cella, Webster, & Cashy, 2005). Content validity and reliability studies were conducted by Hlubocky et al., (2013), and they found that the Cronbach's alpha

coefficient was 0.93, and there was a strong correlation between the items (Hlubocky, Webster, Cashy, Beaumont, & Cella, 2013). The Turkish version of FACT-Lym Scale was developed by the Functional Assessment of Chronic Illness Therapy Organization and is used in research. FACT-Lym contains 42 items including physical wellbeing, social and family wellbeing, emotional wellbeing, functional wellbeing and other concerns. The scale is a five-point Likert type and as total scores obtained from the score increase, the functional status increases (FACIT, 2020). This scale is preferred since it is a functional assessment tool specific to patients with lymphoma. The use of the Turkish version of the scale developed by the FACIT organization was approved. It was seen in the present study that the Cronbach's alpha values related to the subscales of FACT-Lym Scale ranged between 0.778 and 0.894, and the reliability results of the scale were appropriate.

Data Analysis

In the assessment of data obtained in the study, frequency, percentage, arithmetic mean, significance test of the difference between two means, the Mann-Whitney U test, one-way analysis of variance (ANOVA), the Kruskal Wallis analysis of variance, the Pearson's correlation test, the Cronbach's alpha internal consistency test, and Ward's Method as well as hierarchical cluster analysis were used in Statistical Package for Social Sciences 23.0 (IBM SPSS Corp.; Armonk, NY, USA) package program.

Ethical Considerations

Before starting the study, written permissions were obtained from Faculty of Medicine Clinical Trials Ethics Committee and from the hospital where the research was conducted (12.02.2014/96). Written permission was obtained for MSAS used in the study from its authors through e-mail. In order to use the Turkish version of FACT-Lym, written institutional permission was obtained through e-mail from Prof. Dr. David Cella, founder of FACIT.org and head of the Department of Medical Social Sciences of Northwestern University Feinberg Medical School. The patients to be included in the study were informed about the purpose of the study, and their written consents for their participation in the study were obtained.

RESULTS

Descriptive Results about the Participants

When the results in Table 1 about the sociodemographic and clinical characteristics of the patients in-

Table 1. Socio-demographic and clinical findings of lymphoma patients (n=109)

Demographic and Clinical Characteristics	N	%
Gender		
Male	64	58.7
Female	45	41.3
Age		
61-84	36	33.0
46-60	27	24.8
31-45	25	22.9
19-30	21	19.3
Marital Status		
Married	85	78.0
Single	24	22.0
Education Status		
Secondary and high school	48	44.0
University and above	34	31.2
Primary school and below	27	24.8
Profession		
Retired	26	23.9
Officer and worker	25	22.9
Self-employment	25	22.9
Housewife	23	21.1
Student	10	9.2
Working Status		
Unemployed	81	74.3
Half-day or part-time	16	14.7
Full-time	12	11.0
Diagnosis		
Non-hodgkin	80	73.4
Hodgkin	29	26.6
Diagnosis Duration		
4 months and less	29	26.6
Between 5 and 8 months	35	32.1
Between 9 and 12 months	22	20.2
13 months and more	23	20.1
Metastasis Status		
No	81	74.3
Yes	28	25.7
Treatment Type*		
Chemotherapy	109	100.0
Surgical	38	34.9
Radiotherapy	17	15.6
Total Number of Cycles		
Between 2 and 7 cycles	65	59.5
Between 8 and 14 cycles	31	28.6
15 cycles and more	13	11.9
Current Health Problems (n=100)*		
Hypertension	31	31.0
Diabetes	26	26.0
Respiratory system disease	12	12.0
Gastrointestinal disease	9	9.0
Neurological system disease	8	8.0
Musculoskeletal system disease	5	5.0
Coronary artery disease	5	5.0
Congestive heart failure	2	2.0
Hepatitis B/ Hepatitis C	2	2.0

*Percentage is taken based on cumulative n values since multiple options are checked.

Table 2. Results of memorial symptom diagnosis scale for symptoms

	FREQUENCY (Cronbach's alpha=0.717)			SEVERITY (Cronbach's alpha=0.752)			DISTRESS (Cronbach's alpha=0.728)		
Psychological symptoms (n=17)	**X̄**	**SD**	**Cronbach's Alpha Value When item is omitted**	**X̄**	**SD**	**Cronbach's Alpha Value When item is omitted**	**X̄**	**SD**	**Cronbach's Alpha Value When item is omitted**
Difficulty in concentrating	1.65	0.70	0.698	1.82	0.80	0.731	1.12	0.99	0.709
Feeling angry	1.71	0.68	0.728	1.59	0.61	0.784	1.12	0.48	0.722
Difficulty in sleeping	2.35	0.86	0.601	2.29	0.85	0.680	1.76	1.09	0.648
Feeling sad	2.18	0.63	0.654	2.18	0.73	0.654	1.65	0.99	0.600
Worrying	2.18	1.01	0.697	2.29	0.92	0.705	2.06	1.14	0.689
Being sensitive	1.82	0.72	0.674	2.00	0.61	0.721	1.47	0.71	0.736
	FREQUENCY (Cronbach's alpha=0.741)			**SEVERITY (Cronbach's alpha=0.842)**			**DISTRESS (Cronbach's alpha=0.812)**		
Physical symptoms (n=11)	**X̄**	**SD**	**Cronbach's Alpha Value When item is omitted**	**X̄**	**SD**	**Cronbach's Alpha Value When item is omitted**	**X̄**	**SD**	**Cronbach's Alpha Value When item is omitted**
Pain	2.73	0.64	0.751	0.64	0.50	0.851	2.27	0.78	0.797
Fatigue or energy loss	2.45	0.68	0.707	2.82	0.60	0.835	2.36	0.92	0.763
Dry mouth	2.73	0.90	0.705	2.73	1.00	0.821	2.00	0.89	0.795
Nausea	2.64	0.67	0.717	2.64	0.80	0.808	2.27	1.00	0.768
Feeling sleepy or dizzy	2.55	0.93	0.766	2.55	1.03	0.847	2.09	1.04	0.851
Feeling swollen	2.09	0.83	0.670	2.45	0.82	0.836	1.82	1.07	0.785
Vomiting	2.36	0.50	0.702	2.55	1.03	0.834	2.27	0.90	0.802
Loss of appetite	2.09	0.70	0.723	2.18	0.87	0.812	1.82	0.98	0.767
Dizziness	2.18	0.60	0.704	2.27	0.90	0.820	1.91	1.04	0.824
Change in taste of food*				2.18	1.07	0.831	2.00	1.26	0.813
Weight loss*				2.18	0.60	0.816	2.18	0.60	0.784
Constipation*				2.36	0.50	0.837	34.364	0.41	0.807

*Since these symptoms were not included in the frequency part of the scale, they could not be scored. X̄: Mean; SD: Standard deviation

cluded in the study were examined, it was seen that 58.7% of the patients were male, 33% were in the age group of 61–84 years, 78% were married, 44% were secondary school and high school graduates, and 23.9% were retired. In addition, it was also found that 73.4% of the patients were diagnosed with non-Hodgkin's lymphoma, 32.1% had the diagnosis for 5–8 months, and 74.3% had no metastasis. All the patients underwent chemotherapy, 59.5% had between two and seven cycles of treatment. It was also found that most of the patients had at least one chronic disease other than lymphoma and among these diseases, 31% had hypertension and 26% had diabetes.

Results Related to Experienced Symptoms

Table 2 shows results about the symptoms experienced by the patients. It was found that the patients had high item mean scores in difficulty in sleeping

(=2.35±0.86), feeling sad (=2.18±0.63), and anxiety (=2.18±1.01) for MSAS psychological symptoms subscale and in pain (=2.73±0.64), dry mouth (=2.73±0.90), and nausea (=2.64±=0.67) for physical symptoms subscale.

In the study, since the number of patients experiencing each symptom was n=1 based on the data obtained from 109 patients, all symptoms could not be assessed. Three symptoms on the Frequency subscale of MSAS could not be scored since change in taste of food, weight loss, and constipation n value were insufficient. In results of the present study, the Cronbach's alpha values taken from subscales of MSAS were found to be high in terms of frequency (0.717), severity (0.752), and distress (0.728) (Table 2).

Results Related to Symptom Clusters

Three main clusters were identified in each subscale of MSAS in Table 3. It was seen that gastrointestinal symptoms such as nausea, vomiting, loss of appetite, mouth sores, and weight loss were more intensive in the first cluster in frequency and severity subscales.

Table 3. Symptom clustering results by subscales of Memorial Symptom Assessment Scale

Subscales	Main Cluster I	Main Cluster II	Main Cluster III
Frequency Subscale	- Nausea - Vomiting - Loss of appetite - Dry mouth - Fatigue or energy loss - Pain	- Diarrhea - Being/feeling sensitive - Dizziness - Difficulty in swallowing - Difficulty in concentrating - Difficulty in urinating - Feeling swelled - Feeling angry - Problems with sexual desire and activity	- Feeling sad - Worrying - Difficulty in sleeping - Cough - Shortness of breath - Feeling sleepy or dizzy - Sweating - Numbness /tingling in hands or feet - Itching
Severity Subscale	- Mouth sores - Changes in tasting foods - Nausea - Vomiting - Weight loss - Pain - Fatigue or energy loss - Sweating	- Constipation - Swelling of arms or legs - Changes on skin - Dry mouth - Feeling sad Worrying - Feeling sleepy or dizzy - Difficulty in sleeping - Itching	- Cough - Shortness of breath - Numbness/tingling in the hands or feet - Difficulty in swallowing - Swelling of arms or legs - Dizziness - Swelling feeling - Difficulty in urinating - Difficulty in concentrating - Feeling angry - Diarrhea - I don't like myself - Feeling/being sensitive - Problems with sexual desire and activity
Distress Subscale	- Dizziness - Difficulty in swallowing - Feeling sleepy or dizzy - Cough	- Shortness of breath - Swelling of arms or legs - Changes on skin - Itching - Difficulty in concentrating - Feeling angry - Feeling Swelled - Difficulty in urinating - Diarrhea - Feeling/being sensitive - I don't like myself - Numbness in hands or feet - Problems with sexual desire and activity	- Feeling sad - Worrying - Difficulty in sleeping - Sweating - Nausea - Loss of appetite - Mouth sores - Change in taste of food - Weight loss - Pain - Fatigue or energy loss - Dry mouth - Vomiting - Hair loss - Constipation

It was found that physical and psychological symptoms such as dizziness, shortness of breath, feeling sad, and anxiety showed regular distribution in distress subscale.

Results Related to Functional Status

Table 4 shows results related to the functional statuses of the patients. In the Functional Assessment in Cancer Patients – Lymphoma, mean scores of the items "I have pain" (=2.02±0.87) and "My energy is low" (=2.00±0.94) in the Physical Wellbeing subscale; "My family accepted my illness" (=2.94±1.01) and "I am happy with my family's communication about my illness" (=2.87±0.97) in the Social/Family Wellbeing subscale; "I feel sad" (=1.37±1.08) and "I am worried if my condition will get worse" (=1.30±1.14) in the Emotional Wellbeing subscale; "I have accepted my illness" (=2.72±0.93) and "I can enjoy life" (=2.32±0.99) in the Functional Wellbeing subscale; "I get tired quickly" (=2.27±0.93) and "Certain parts of my body hurt" (=2.23±0.84) items in Other Concerns subscale were found to be higher. When the item "I am satisfied with my method of coping with my illness" from the Emotional Wellbeing subscale was omitted, the Cronbach's alpha value increased from 0.674 to 0.843. Thus, this item was removed from the scale upon the recommendation of a statistical expert, and the analysis was conducted again with the remaining items. The Cronbach's alpha values of the FACT-Lym Scale were found high at 0.778 for physical wellbeing, 0.835 for social/family wellbeing, 0.843 for emotional wellbeing, 0.781 for functional wellbeing, and 0.894 for other concerns (Table 4).

Effect of Symptoms on Functional Status

In order to assess the effect of the symptoms experienced by the patients on the functional status. The correlation between MSAS and FACT-Lym scales were evaluated statistically. The correlation between them was found to be statistically insignificant ($p>0.05$). When the correlation values of MSAS subscales were examined in Table 5, it was found that all correlation coefficients of the subscales were significantly correlated, and the correlations between the subscales were positive ($p<0.05$ and $p<0.01$). When the correlation values of the subscales of FACT-Lym Scale were examined, it was found that the correlation coefficients of the subscales were significantly correlated and six correlation structures were negative and statistically significant ($p<0.05$ and $p<0.01$) (Table 6).

DISCUSSION

This study was conducted to determine symptom clustering and to investigate its effect on functional status in patients with lymphoma. On symptom evaluation through MSAS subscales, the results showed that lymphoma patients experienced more gastrointestinal symptoms such as changes in taste, weight loss, constipation; psychological problems such as difficulty in sleeping, feeling sad and anxious; and physical problems such as pain, dry mouth, and nausea. In the results of the study conducted by Bölükbaş & Kutlutürkan (2014), it was found that patients with lymphoma mostly experienced problems such as changes in taste, lack of energy, and hair loss. It was determined that the functional status and quality of life were negatively affected by pain, sleep disorder, depression, and fatigue type symptoms in the study by Oh, Seo, Jeong, & Seo (2012); and the symptoms such as pain, weakness and sleep disorders in the study conducted by Süren, Doğru, Önder, Çeltek, Okan, Karaman, & Başol, (2015). In these patients, functional status may be negatively affected depending on the diagnosis, illness, and treatment effects. It is believed that evaluation of physical and psychological symptoms experienced by patients with lymphoma and planning appropriate nursing interventions are important.

MSAS symptom mean scores of patients with lymphoma were examined with hierarchical cluster analysis method by using Ward's Method under frequency, severity, and distress subscales, and the symptoms were collected in three main clusters in frequency, severity, and distress subscales. In the first main cluster in the frequency subscale of MSAS, symptoms of nausea, vomiting, loss of appetite, dry mouth, pain, weakness or loss of energy were combined. It was found that in the first main cluster in severity subscale of MSAS in symptom cluster, symptoms of mouth sores, changes in the taste of food, nausea, vomiting, weight loss, pain, weakness or energy loss, and sweating were seen together. Dizziness, difficulty in swallowing, feeling sleepy or dizzy, and cough symptoms were seen together in the first main cluster in the distress subscale of MSAS.

The first symptom cluster was determined to involve nausea, loss of appetite, and pain symptoms as a result of a study by Chen et al. (2012) and gastrointestinal symptoms such as nausea and vomiting in the results of the study by Molassiotis, Farrell,

Table 4. Functional status-related results of Functional Assessment of Cancer Therapy–Lymphoma (FACT-Lym) Scale (n=109)

Fact-Lym Subscales	$\bar{X}$	SD	Cronbach's alpha
Physical Wellbeing (Cronbach's alpha=0.778)			
My energy is low	2.00	0.94	0.750
I have nausea	1.65	1.08	0.751
I have difficulty in meeting my family's needs because of my physical condition	1.69	1.04	0.766
I have pain	2.02	0.87	0.779
Side effect of treatment bothers me	1.96	1.09	0.695
I feel sick	1.88	1.03	0.720
I have to sleep in bed	1.86	1.06	0.698
Social/Family Wellbeing (Cronbach's alpha=0.835)			
I feel close to my friends	2.29	1.29	0.818
I get moral support from my family	2.83	1.02	0.784
I get support from my friends	2.52	1.24	0.802
My family accepted my illness	2.94	1.01	0.813
I'm pleased with my family's communication about my illness	2.87	0.97	0.779
I feel close to my life partner	2.66	1.39	0.818
Emotional Wellbeing (Cronbach's alpha=0.8431)			
I feel sad			
I'm losing hope in my struggle with the disease	1.37	1.08	0.809
I feel angry	0.87	1.09	0.790
I'm afraid to die	0.94	1.02	0.789
I'm worried that my condition will get worse.	1.19	1.00	0.852
My sexual life is satisfying	1.30	1.14	0.807
Functional Wellbeing (Cronbach's alpha=0.781)			
I can work	1.46	1.19	0.766
My job satisfies me	1.66	1.09	0.771
I can enjoy life	2.32	0.99	0.707
I accepted my illness	2.72	0.93	0.803
I sleep well	2.28	1.01	0.762
I enjoy what I do for fun	2.15	0.97	0.721
I am satisfied with the quality of my current life	2.20	0.94	0.731
Other Concerns (Cronbach's alpha=0.894)			
Masses or swelling in certain parts of my body bother me	1.28	1.13	0.886
Certain parts of my body hurt	2.23	0.84	0.890
My fever bothers me	1.50	1.19	0.881
I sweat at night	1.46	1.02	0.898
Itching bothers me	1.16	1.06	0.889
I have difficulty sleeping at night	1.40	1.09	0.888
I get tired quickly	2.27	0.93	0.885
I am losing weight	1.86	1.03	0.889

Table 4. Functional status-related results of Functional Assessment of Cancer Therapy–Lymphoma (FACT-Lym) Scale (n=109) (continued)

Fact-Lym Subscales	X̄	SD	Cronbach's alpha
My appetite decreased	1.70	0.97	0.885
I'm having trouble concentrating	0.87	0.94	0.885
I'm worried about getting infection	1.92	1.25	0.898
I'm worried that there may be new signs of my illness	1.60	1.17	0.886
I feel distant from others due to my illness or treatment	1.22	1.24	0.884
My emotional state is fluctuating	1.41	1.24	0.878
I have difficulty in making plans for the future because of my illness	1.27	1.15	0.881

X̄: Mean; SD: Standard deviation

Bourne, Brearley, & Pilling (2010). Based on results of a study conducted by Dodd et al. (2001), it was determined that the most frequently encountered symptom cluster in cancer patients was pain, weakness, and sleep disorder symptoms, and these symptoms negatively affected functional status and quality of life. As a result of a study conducted by Dong, Butow, Costa, Lovell, & Aggar (2014) with advanced cancer patients, a symptom cluster was found to be caused by the gastrointestinal system consisting of complaints such as nausea, vomiting, and loss of appetite. In the results of studies by Aktaş, Walsh, & Hu (2014) and Karabulu, Erci, Özer, & Özdemir (2010); the first symptom cluster was composed of gastrointestinal system related symptoms such as nausea and vomiting. The results of a study of Pirri et al. (2013) showed that gastrointestinal system symptoms such as nausea, loss of appetite, and vomiting were at the top of the list. These results suggested that symptoms related to pain and gastrointestinal system in patients with lymphoma should be prioritized, and corresponding nursing interventions should be planned.

In the present study, results related to functional status showed that patients with lymphoma experienced problems related to physical and psychological functions such as pain, fatigue, low energy, and feeling sad and worried. The fact that these patients had high mean scores in the items such as accepting the disease, having pleasure in life, acceptance of disease by the family, and being satisfied about the communication with the family on the illness in the results of the present study was assessed positively. It is thought that the coping process of patients with lymphoma can be difficult and tiring due to the reasons such as disease, treatment, complications, and changes in all daily living activities. Symptom burnout, treatment delays or disruptions can be seen in these patients due to the coexistence of multiple symptoms. In order to improve the functional status of the patients, it is important to plan and maintain the nursing interventions toward managing the symptoms experienced by the patients appropriately, improving positive coping methods and family relationships, and strengthening social support systems.

Results of the present study found that there was no statistically significant correlation between the FACT-Lym Scale total mean scores evaluating functional status and MSAS total mean scores evaluating symptoms ($p>0.05$). The reason for this could be the small number of patients included in the study due to less incidence of hematologic malignancies and the low number of responses given to the symptom assessment subscales due to the small number of patients.

When examining the MSAS subscales, where the symptoms were evaluated in pateints with lymphoma, a significant correlation was found among the subscales themselves ($p<0.05$ and $p<0.01$). It can be thought that the frequency, severity, and distress of psychological and physical symptoms increased together, and this adversely affected the symptom burden of the patients.

It was found that there was a significant correlation among the subscales of FACT-Lym Scale in which functional status of patients with lymphoma was evaluated ($p<0.05$ and $p<0.01$). In accordance with these results, it was understood that the social, family, and functional wellbeing worsened as physical wellbeing deteriorated; the other concerns also increased as the social and family wellbeing worsened; functional well-

Table 5. Correlation results of subscales of Memorial Symptom Assessment Scale

	r	p
Psychological Symptoms (n=17)		
Frequency – Severity	0.914	0.000**
Frequency – Distress	0.883	0.000**
Severity – Distress	0.881	0.000**
Physical Symptoms (n=11)	**r**	**p**
Frequency – Severity	0.786	0.004**
Frequency – Distress	0.681	0.021*
Severity – Distress	0.865	0.001**

* p<0.05
** Significant at p<0.01 level

Table 6. Correlation results of the subscales of Functional Assessment of Cancer Therapy – Lymphoma (FACT-Lym) (n=109)

	r	p
Physical Wellbeing - Social /Family Wellbeing	-0.224	0.019*
Physical Wellbeing - Emotional Wellbeing	0.567	0.000**
Physical Wellbeing - Functional Wellbeing	-0.451	0.000**
Physical Wellbeing - Other Concerns	0.680	0.000**
Social and Family Wellbeing - Emotional Wellbeing	-0.510	0.000**
Social and Family Wellbeing - Functional Wellbeing	0.580	0.000**
Social and Family Wellbeing - Other Concerns	-0.328	0.001**
Emotional Wellbeing - Functional Wellbeing	-0.518	0.000**
Emotional Wellbeing - Other Concerns	0.753	0.000**
Emotional Wellbeing - Other Concerns	-0.360	0.000**

*p<0.05
**Significant at p<0.01 level

being decreased as the emotional wellbeing worsened and other concerns increased as the functional well-being decreased. In addition, the results showed that as physical wellbeing improved, emotional wellbeing improved and other concerns decreased; functional wellbeing increased as the social and family wellbeing improved; and other concerns decreased as the emotional wellbeing improved. It can be said that as functionality and well-being on physical, emotional, and social life increased in the process of coping with cancer, these components affected each other and the life improved positively. On the other hand, as the physical health perception deteriorated, functional life areas related to emotional, social, and activity were negatively affected.

One symptom can not only trigger other symptoms in cancer patients but also occur independently from each other by different mechanisms. Therefore, it is reported in the studies that treatment of patients with more than one symptom can be difficult and complex. The abundance of symptom clusters may cause more complaints in patients and relatives and impair the quality of their lives. Therefore, it seems to be important to evaluate the symptoms as a whole systematically in all patients followed by cancer diagnosis and treatment, to observe other symptoms along with the main symptom experienced by the patient, and to improve the quality of life and functional status of the patients with effective treatment and interventions.

Determining whether the symptoms of cancer patients presenting to clinics with more than one problem, cluster among themselves and the correlation between them may contribute to the implementation of a more effective symptom management and nursing intervention. Symptom studies are considered as a difficult field because they are based on

versatile and subjective data. Besides, it is believed that the study results investigating the mechanism and incidence of symptom clusters might have a positive effect on symptom management and nursing care of cancer patients.

Study Limitations

Difficulties were experienced in the analysis of symptom clustering of MSAS statistically due to reasons such as examining MSAS used for symptom clustering in three subscales including frequency, severity, and distress, small number of patients in the sample diagnosed with lymphoma; and when patients did not experience one of the symptoms, the severity and distress levels of the same symptom could not be investigated statistically. Since the number of MSAS symptoms stated to be experienced by these patients was less, the effect of symptom clustering on functional condition could not be investigated.

CONCLUSION AND RECOMMENDATIONS

According to the results of the present study, the most frequently experienced psychological symptoms were difficulty in sleeping and feeling sad and worried; and the physical symptoms were pain, dry mouth, and nausea. According to symptom clustering, it was found that the patients diagnosed with lymphoma experienced more than one physical and psychological symptoms. According to results of the FACT-Lym Scale, functional status of patients with lymphoma were negatively affected by pain, low energy, feeling sad, worrying about worsening of his/her condition, fatigue, and pain in certain parts of the body. It was determined that as the physical symptoms increased, the psychological symptoms increased and social functions decreased. On the other hand, psychological wellbeing increased and social functions improved as the physical symptoms decreased.

In accordance with these results, it is recommended that when caring patients with lymphoma, healthcare professionals must:

- Plan nursing interventions for the primary symptoms such as pain, nausea, dry mouth, difficulty in sleeping, and worry.
- Direct patients to work and activities to reduce physical symptoms.
- Plan nursing interventions primarily for pain problems and psychological support needs to improve functional status.
- Plan nursing interventions towards observing symptom clusters and physical and psychological symptoms and considering them together in order to improve functional status.

For the researchers, it is recommended to:

- Use MSAS to evaluate symptoms of cancer patients but to keep the number of samples high in order to better evaluate the subscales.
- Use scales with fewer number of subscales and items in the studies of evaluating symptom cluster.
- Conduct Turkish validity and reliability studies of FACT-Lym Scale which was developed to assess functional status of lymphoma patients and whose Turkish version was prepared by FACIT organization.

Ethics Committee Approval: Ethics committee approval was received for this study from the Clinical Trials Ethics Committee of Akdeniz University, Faculty of Medicine (12.02.2014 / 96).

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