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LIFE SCIENCES GROUP

INTERNATIONAL JOURNAL OF
Sexual and Reproductive Health Care OPEN ACCESS JOURNAL

ISSN: 2690-0815 DOI: https://dx.doi.org/10.17352/ijsrhc

Research Article

Quality of life, sexual satisfaction, anxiety and depression status in lymphoma survivors

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Received: 14 December, 2022
Accepted: 26 December, 2022
Published: 27 December, 2022

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Keywords: Sexual satisfaction; Anxiety; Depression; Quality of life; Lymphoma

Abstract

Objective: The progressive development of lymphoma therapies has led to an important prolongation of patient survival. We aimed to investigate anxiety, depression, sexual satisfaction and health-related quality of life status in these lymphoma survivors. We examined the effects of depression, anxiety and sexual satisfaction on the quality of life.

Materials and methods: In a prospective study, the data were collected from fifty lymphoma survivors. We used six forms. These forms consist of sociodemographic features, the Beck Depression Inventory (BDI), Beck Hopelessness Scala (BHS), State-Trait Anxiety Inventory (STAI I-II), Golombock-Rust Inventory of Sexual Satisfaction (GRISS) and European Organization for Research on the treatment of Cancer Questionnaires Quality of Life (QoL) - C30 questionnaires.

Results: The mean age of the patients was 50,2 ± 14,8 (20 – 75) years, and 50% of them were females. In our study, we found that 26% of the patients had high depression values above the cutoff (≥ 17 of BDI score). The mean depression score of the patients was 10,6 ± 8 (0 - 32) and the mean hopelessness score was 5,7 ± 4,5 (0 - 19). The patients whose anxiety and depression scores were high role, cognitive and emotional functioning of EORTC-QLQ-C30 was found statistically significantly low. The mean STAI-I score of the patients was 35,6 ± 11,3 (22-73) and the mean STAI-II score was 41,4 ± 10,6 (23 - 67). Statistical significance in terms of emotional and social functioning was found in the patients with high anxiety scores. When all patients were evaluated with respect to GRISS, we found high scores (> 5) for frequency, communication, vaginusmus and premature ejaculation. We compared the EORTC-QoL-C30 scores and GRISS of the patients. There was an association between emotional dysfunction with high scores of frequency (p = 0.040). Also, there was an association between low scores of role functioning with high scores of avoidance and premature ejaculation (p = 0.015, p = 0.003). However, there was a significant correlation between low scores of global QoL with high scores of avoidance, communication, and touch. There was no statistically significant difference between the anxiety and depression levels of the patient according to gender. But, some functional scales including role function (p = 0.001), social function (p = 0.001) and cognitive function (p = 0.027) were lower in female patients.

Conclusion: The lymphoma survivors had high anxiety and depression scores, reduced sexual functioning and low functioning scales of QoL. There was an association between sexual dysfunction low role, emotional functioning and global QoL scores in patients.

Citation: Solmaz S, Cetintepe T, Turkyilmaz D, Asik N, Demirkan F, et al. (2022) Quality of life, sexual satisfaction, anxiety and depression status in lymphoma survivors. Int J Sex Reprod Health Care 5(1): 061-068. DOI: https://dx.doi.org/10.17352/ijsrhc.000038

Introduction

Non-Hodgkin Lymphoma (NHL) is the tenth most common cancer worldwide [1]. Recently, its incidence has been on the rise. However, health concerns among NHL survivors have also gained importance. Sexual distress is one of the most common consequences of cancer treatment. It has a negative effect on health-related quality of life (HRQOL) among survivors and may persist for a long period of time [2]. More than 80% of newly diagnosed Hodgkin Lymphoma (HL) patients live longer and consequently are at risk of experiencing long-term adverse psychical and psychosocial side effects associated with their disease and its treatment [3,4]. Treatment-related long-term side effects such as secondary malignancy and organ failure reduce the quality of life and life expectancy of survivors [5]. HRQOL may be reduced because of treatment-related organic dysfunctions, psychological consequences and persisting gonadal and cognitive dysfunction in HL survivors [6].

The primary aim of lymphoma treatment is to increase the survival of the patients. But the psychological problems (anxiety, depression) can cause a decrease in HRQOL and sexual function disorder. In this study, we aimed to determine the psychosocial and sexual problems and their interactions with each other in patients with lymphoma.

Patients and methods

Fifty patients who were diagnosed with lymphoma and followed up by İzmir Bozyaka Education and Research Hospital and Dokuz Eylul University, Department of Hematology between 2007 and 2017, were included in our study. We included the patients who were followed up for 2 years. Data were collected using a series of forms to determine the sexual satisfaction, psychological status and HRQOL of the patients. The questionnaires were delivered to the patients upon their informed consent and they responded to the questions that they desired.

Beck Depression Inventory (BDI)

The BDI was developed by Beck, Wart, Mendelson, Mock, and Erbaugh (1961) and was translated into Turkish by Hisli (1988). The reported alpha coefficient for the BDI was 0.74 in the Turkish population. BDI consists of 21 questions or items, each with 4 alternative responses. Each response is assigned a score ranging from 0 to 3, indicating the severity of the symptom. Individual questions of the BDI assess mood, pessimism, sense of failure, self-dissatisfaction, guilt, punishment, self-dislike, self-accusation, suicidal ideas, crying, irritability, social withdrawal, body image, work difficulties, insomnia, fatigue, appetite, weight loss, bodily preoccupation, and loss of libido. The highest score is 63; 1 - 10 is considered normal, 11 - 16 indicates mild mood disturbance, 17 - 20 indicates moderate depression, 31 - 40 indicates severe depression and > 40 indicates major depression. Items 1 to 13 assess symptoms that are psychological in nature, while items 14 to 21 asses more physical symptoms [7]. BDI was translated into Turkish by Tegin and Hisli. For the Turkish population, a score of 17 or higher represents depression by Hisli [8,9]. We used these cut-off scores to examine the levels of depression.

Beck Hopelessness Scale (BHS)

Hopelessness was assessed with the BHS, which is composed of 20 questions or items. The response format for the BHS is true/false. The BHS scores range from 0 to 20. The scale was adapted for the Turkish population by Durak in 1994. The scale consists of 20 statements [10].

The State-Trait Anxiety Inventory (STAI I-II)

There are 2 subscales within this instrument. The first subscales (20 items) measure state anxiety by asking subjects how they feel 'right now'. The second subscale (20 items) measures trait anxiety by asking subjects how they 'generally' feel. State and trait anxieties are scored separately. Both scores range from 20 to 80, high scores indicate a greater level of anxiety. First published in 1970 with the original STAI-X, the STAI was revised in 1983 (STAI-Y) [11,12]. It was translated and validated into the Turkish language by Oner [13].

The Golombok-Rust Inventory of Sexual Satisfaction (GRISS)

The fourth form was the Golombok-Rust Inventory of Sexual Satisfaction (GRISS). The GRISS is a 28-item questionnaire that is used to evaluate the presence and extent of sexual problems. It has two different versions for males and females. It includes 12 subscales evaluating importance, premature ejaculation, orgasmic disorder, vaginismus, lack of communication, avoidance in males and females, non-sensuality and insensitivity in males and females. A score of five points or higher in any category indicates sexual dysfunction [14]. We applied the male and female versions of GRISS in our study. In any category, a score of 5 points or higher indicates sexual dysfunction. A validation and reliability study of the GRISS in the Turkish population was performed by Tugrul, et al. [15].

The European Organization for Research on Treatment of Cancer Quality of Life-C30 (EORTCQoL-C30) Questionnaire

The fifth form was the European Organization for Research on Treatment of Cancer Quality of Life–C30 (EORTCQoL-C30) Questionnaire. It consists of 30 items assessing the QoL of cancer patients in three major domains: functional scales, global health/QoL and symptom scales [16]. Functional scales consist of physical (five items), social (two items), emotional (four items), role (two items), and cognitive (two items) items. QoL scale consists of two items and there are nine symptom scales [17]. We did not use symptom scales of EORTCQoL-C30, as our patients were in remission.

Statistics

All data were analyzed by using SPSS version 20.0. Descriptive statistics summarized frequencies and percentages for categorical variables and mean and standard deviation for

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continuous variables. For independent samples, T-tests were used to compare categorical variables. A value of $p < 0.05$ was considered to be significant.

Ethics

The study was approved by the Institutional Review Board at the University of Health Sciences, Izmir Bozyaka Education and Research Hospital (04/07/2018 2018-03).

Results

The patient characteristics are summarized in Table 1. The mean age of the patients was 50.2 ± 14.8 (20 – 75) years and 50% of them were female. Of the patients, 34% were primary school graduates, while only 12% graduated from college. Patients were diagnosed as follows: 76 % non-Hodgkin lymphoma and 24% Hodgkin lymphoma. Of these patients, 16 patients (32%) had a local disease and 34 patients (68%) had advanced disease. The majority of the patients (82%) were married. Seventy percent of the patients were non-smokers and 90% of the patients did not present regular alcohol consumption. All patients were ambulant patients.

The validation study of the BDI scale in Turkey found the cut-off value of depression as 17. In the present study, we found that 26% of the patients had high depression scores above the cut-off (≥ 17 of the BDI score). The patients' mean depression score was 10.6 ± 8 (0 - 32) and the mean hopelessness score was 5.7 ± 4.5 (0 - 19). There was a significantly positive relationship between hopelessness and depression scores ($p = 0.004$). There were no significant differences between the hopelessness and depression scores of the patients in terms of sociodemographic characteristics. There was a significant relationship between a high hopelessness score with an advanced stage of the disease ($p = 0.009$).

The mean STAI-I and STAI-II scores of the patients were 35.6 ± 11.3 (22 - 73) and 41.4 ± 10.6 (23 - 67), respectively. No significant difference was found between the STAI-I and STAI-II scores of the patients in terms of sociodemographic characteristics.

The accepted cut-off value of GRISS is 5 for Turkish people. Accordingly, 27 patients (54%) had problems with avoidance, 24 patients (48%) with satisfaction, 18 patients (36%) with touch, 19 patients (38%) with communication, 9 patients (36%) with impotence, 12 patients (48%) with premature ejaculation, 15 patients (60%) with vaginismus and 3 patients (12%) with anorgasmia. An evaluation of all patients according to GRISS revealed high scores (> 5) for frequency, communication, vaginismus and premature ejaculation (N: 28, 56%). The mean scores of anxiety, depression and hopelessness levels, GRISS and EORTC-QLQ-C30 function scales of all patients are shown in Table 2.

There was a significant relationship between high depression scores, communication scores and impotence scores of the patients ($p = 0.011$ and $p = 0.02$). No significant difference was found between hopelessness and GRISS scores of the patients. There was a significant relationship between

Table 1: Demographic characteristics of patients with lymphoma.

Sociodemographic characteristics	Patients ($n = 50$)
Age (mean ± SD; min-max)	50.2 ± 14.8 (20 – 75)
Gender	
Male	25 (50%)
Female	25 (50%)
Marital Status	
Single (Widowed, Not Married)	9 (18%)
Married	41 (82%)
Education	
Uneducated	3 (6%)
Primary education	17 (34%)
High school	24 (48%)
University	6 (12%)
Monthly income	
TL 0–1000 [a]	23 (46%)
TL 1000 [a] and above	27 (54%)
Smoker	
Yes	15 (30%)
No	35 (70%)
Alcohol	
Yes	5 (10%)
No	45 (90%)
Occupation	35 (70 %)
Employed	15 (30%)
Unemployed	
Disease stage	
Local disease	16 (32%)
Advanced disease	34 (68%)
Treatment	
Chemotherapy	43 (86%)
Chemotherapy/Radiotherapy	6 (12%)
Chemotherapy/Autologous transplantation	1 (2%)
Cancer history in the family	
Yes	8 (16%)
No	42 (84%)

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Table 2: The mean scores of anxiety, depression and hopelessness levels, GRISS and EORTC-QLQ-C30 function scales of all the patients.

	Patients Scores / N
BDI	5.70 ± 4.5 / 50
BHS	10.7 ± 8 / 50
STAI -I	35.6 ± 11.3 / 50
STAI-II	41.4 ± 10.6 / 50
Frequency	5.6 ± 1.9 / 43
Communication	5.8 ± 2.6 / 43
Avoidance	4.8 ± 1.6 / 43
Touch	4.8 ± 2.6 / 43
Satisfaction	3.2 ± 1.4 / 43
Vaginismus	6.1 ± 0.95 / 22
Anorgasmia	3.8 ± 0.9 / 22
Premature Ejaculation	5.9 ± 1.9 / 21
Impotence	4.5 ±1.8 / 21
Physical functioning	75.7± 18 / 50
Role functioning	85.2 ± 21 / 50
Emotional functioning	82 ± 22 / 50
Cognitive functioning	83.6 ± 21 / 50
Social functioning	80.7 ± 28 / 50
Global quality of life	69 ± 27 / 50

N: Number of patients; BDI: Beck Depression Inventory; BHS: Beck Hopelessness Scale; STAI: The State-Trait Anxiety Inventory; EORTC-QoL-C30: The European Organization for Research on the treatment of Cancer Questionnaires Quality of Life-C30; GRISS: Golombok-Rust Inventory of Sexual Satisfaction

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high STAI-II scores and premature ejaculation, satisfaction and impotence scores of the patients (p = 0.010, p = 0.020 and p = 0.006) (Table 3).

We examined the association between EORTC-QoL-C30 scores and the anxiety and depression levels of our patients. The EORTC-QoL-C30 function scales (emotional functioning and cognitive functioning) of the patients with higher BHS scores were also significantly lower than those of the patients with lower BHS scores. Additionally, the emotional functioning and the social functioning scores were lower in patients with high anxiety scores. However, there was no statistically significant difference between patients with low depression scores and high depression scores in terms of Global QoL scores. Patients with high anxiety scores presented statistical significance in terms of emotional and social functioning (Table 4).

We compared the EORTC-QoL-C30 scores and Golombok-Rust Sexual Satisfaction scores of the patients. Emotional dysfunction was associated with high scores of frequency (p = 0.040). Also, low scores of role functioning were associated with high scores of avoidance and premature ejaculation (p = 0.015, p = 0.003). However, there was a significant correlation between low scores of global QoL with high scores of avoidance, communication and touch (Table 5).

We examined the association between EORTC-QoL-C30, GRISS scores and anxiety and depression levels of our patients according to gender. There was no statistically significant difference between anxiety and depression levels of patients according to gender. However, some functional scales including role function (p = 0.001), social function (p = 0.001) and cognitive function (p = 0.027) were lower in female patients, but there was no significant difference between global QoL scores of patients according to gender (p = 0.5) (Table 6). Our evaluation of male patients according to GRISS indicated high scores (> 5) for communication and premature ejaculation (N: 18 of male patients, 72%). We also found high scores for touch, communication, avoidance, vaginismus, and frequency when we evaluated female patients according to GRISS (N: 10 of female patients, 40%). We found high scores of global

Table 3: The comparison of Golombok-Rust Sexual Satisfaction scores and anxiety, depression and hopelessness levels of the patients.

	BDI	Mean ± SD	p	BHS	Mean ± SD	p	STAI	Mean ± SD	p
Frequency N: 43	≥ 17 < 17	5.4 ± 1.7 5.6 ± 2.1	0.26	≥ 5 < 5	5.8 ± 1.8 5.3 ± 2	0.4	≥ 35 < 35	6 ± 2 5.3 ± 1.9	0.8
Communication N:43	≥ 17 < 17	7.2 ± 1.7 5.3 ± 2.8	0.011	≥ 5 < 5	6.2 ± 2.6 5.5 ± 2.7	0.7	≥ 35 < 35	6 ± 2.7 5.7 ± 2.6	0.7
Avoidance N: 43	≥ 17 < 17	5.4 ± 1.8 4.5 ± 1.5	0.8	≥ 5 < 5	4.6 ± 1.9 4.8 ± 1.4	0.09	≥ 35 < 35	4.5 ± 1.5 4.8 ± 1.7	0.8
Touch N: 43	≥ 17 < 17	7.2 ± 1.6 4.1 ± 2.4	0.06	≥ 5 < 5	5.4 ± 2.5 4.5 ± 2.7	0.2	≥ 35 < 35	5.5 ± 2 4.4 ± 2.8	0.09
Satisfaction N:43	≥ 17 < 17	4.1 ± 1.4 2.8 ± 1.3	0.9	≥ 5 < 5	3.8 ± 1.3 2.7 ± 1.3	0.3	≥ 35 < 35	3.4 ± 0.9 3 ± 1.6	0.02
Vaginismus N: 22	≥ 17 < 17	6.6 ± 0.5 5.6 ± 1	0.33	≥ 5 < 5	6.1 ± 0.6 5.9 ± 1.1	0.3	≥ 35 < 35	6.2 ± 0.7 5.7 ± 1.1	0.6
Anorgasmia N: 22	≥ 17 < 17	4.3 ± 1 3.6 ± 0.8	0.7	≥ 5 < 5	4.2 ± 0.9 3.5 ± 0.9	0.9	≥ 35 < 35	4.2 ± 0.9 3.5 ± 0.9	0.7
Premature Ejaculation N: 21	≥ 17 < 17	7 ± 1.6 5.5 ± 1.9	0.1	≥ 5 < 5	7.1 ± 1.4 5.1 ± 1.8	0.18	≥ 35 < 35	5.8 ± 1.3 6 ± 2.1	0.01
Impotence N: 21	≥ 17 < 17	5.7 ± 0.5 4.1 ± 1.8	0.02	≥ 5 < 5	4.7 ± 1.7 4.4 ± 1.8	0.7	≥ 35 < 35	5.4 ± 0.5 4.2 ± 1.9	0.006

N: Number of patients; BDI: Beck Depression Inventory; BHS: Beck Hopelessness Scale; STAI: The State - Trait Anxiety Inventory

Table 4: The comparison of EORTC-QoL-C30 scores and anxiety, depression and hopelessness levels of the patients.

	BDI N13/37	Mean ± SD	p	BHS N24/26	Mean ± SD	p	STAI N34/16	Mean ± SD	p
Physical functioning	≥ 17 < 17	66.9 ± 15.6 84.5 ± 15.7	0.94	≥ 5 < 5	69.4 ± 18.3 81 ± 16.3	0.56	≥ 35 < 35	70.3 ± 18.4 87.4 ± 12.5	0.2
Role functioning	≥ 17 < 17	79 ± 23.6 94 ± 15.7	0.014	≥ 5 < 5	84.3 ± 20.6 86 ± 23.2	0.51	≥ 35 < 35	82.5 ± 24.4 91.1 ± 16	0.06
Emotional functioning	≥ 17 < 17	72.9 ± 24.7 93.3 ± 12.5	0.031	≥ 5 < 5	73.3 ± 26.4 90.8 ± 13.8	0.033	≥ 35 < 35	78.3 ± 24.2 94.3 ± 9.6	0.02
Cognitive functioning	≥ 17 < 17	73 ± 24 84.8 ± 9.2	0.009	≥ 5 < 5	74.5 ± 26.6 91.2 ± 11.5	0.008	≥ 35 < 35	80.5 ± 24 90 ± 12	0.19
Social functioning	≥ 17 < 17	72.9 ± 30.7 93.3 ± 12.5	0.22	≥ 5 < 5	77.4 ± 32.3 83.5 ± 24.8	0.32	≥ 35 < 35	75.2 ± 31.9 94.9 ± 12	0.009
Financial problems	≥ 17 < 17	42.6 ± 35.3 19 ± 29	0.22	≥ 5 < 5	31.8 ± 36.3 30.6 ± 33	0.73	≥ 35 < 35	38.5 ± 36 19.4 ± 26.4	0.24
Global quality of life	≥ 17 < 17	70.6 ± 22.6 77.6 ± 29.4	0.18	≥ 5 < 5	61.3 ± 25.2 75.6 ± 27.2	0.48	≥ 35 < 35	62.7 ± 27 83.9 ± 21.9	0.5

N: Number of patients; BDI: Beck Depression Inventory; BHS: Beck Hopelessness Scale; STAI: The State-Trait Anxiety Inventory; EORTC-QoL-C30: The European Organization for Research on Treatment of Cancer Questionnaires, Quality of Life-C30

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Table 5: The comparison of EORTC-QoL-C30 scores and Golombok-Rust Sexual Satisfaction scores of the patients.

	Frequency N24/26	Communication N24/26	Avoidance N24/26	Touch N24/26	Satisfaction N24/26	Vaginismus N14/8	Impotence N12/9	Premature Ejac. N12/9
Physical functioning	≥ 5 77 ± 21 < 5 78 ± 12 *p* = 0.07	≥ 5 76 ± 19 < 5 80 ± 16 *p* = 0.71	≥ 5 79 ± 18 < 5 73 ± 18 *p* = 0.98	≥ 5 72 ± 19 < 5 86 ± 14 *p* = 0.33	≥ 5 72 ± 20 < 5 78 ± 18 *p* = 0.73	≥ 5 68 ± 17 < 5 87 ± 10 *p* = 0.31	≥ 5 82 ± 16 < 5 88 ± 15 *p* = 0.95	≥ 5 85 ± 17 < 5 85 ± 15 *p* = 0.83
Role functioning	≥ 5 84 ± 23 < 5 86 ± 22 *p* = 0.88	≥ 5 81 ± 23 < 5 93 ± 19 *p* = 0.09	≥ 5 81 ± 25 < 5 93 ± 13 *p* = 0.015	≥ 5 83 ± 20 < 5 87 ± 26 *p* = 0.32	≥ 5 86 ± 14 < 5 85 ± 24 *p* = 0.17	≥ 5 74 ± 26 < 5 100 *p* = 0.34	≥ 5 93 ± 15 < 5 95 ± 12 *p* = 0.65	≥ 5 91 ± 16 < 5 100 *p* = 0.003
Emotional functioning	≥ 5 85 ± 24 < 5 86 ± 15 *p* = 0.18	≥ 5 76 ± 29 < 5 90 ± 15 *p* = 0.04	≥ 5 85 ± 24 < 5 85 ± 14 *p* = 0.19	≥ 5 85 ± 17 < 5 85 ± 27 *p* = 0.59	≥ 5 75 ± 12 < 5 87 ± 23 *p* = 0.15	≥ 5 80 ± 27 < 5 100 *p* = 0.38	≥ 5 85 ± 15 < 5 95 ± 9 *p* = 0.09	≥ 5 91 ± 14 < 5 86 ± 14 *p* = 0.89
Cognitive functioning	≥ 5 83 ± 22 < 5 86 ± 15 *p* = 0.51	≥ 5 86 ± 14 < 5 82 ± 28 *p* = 0.14	≥ 5 86 ± 21 < 5 80 ± 15 *p* = 0.66	≥ 5 83 ± 215 < 5 87 ± 26 *p* = 0.66	≥ 5 76 ± 16 < 5 86 ± 20 *p* = 0.92	≥ 5 76 ± 25 < 5 100 *p* = 0.47	≥ 5 86 ± 12 < 5 97 ± 6 *p* = 0.10	≥ 5 90 ± 13 < 5 93 ± 8 *p* = 0.20
Social functioning	≥ 5 80 ± 30 < 5 87 ± 16 *p* = 0.13	≥ 5 84 ± 25 < 5 79 ± 29 *p* = 0.68	≥ 5 80 ± 30 < 5 86 ± 15 *p* = 0.09	≥ 5 80 ± 25 < 5 87 ± 27 *p* = 0.81	≥ 5 86 ± 15 < 5 81 ± 28 *p* = 0.15	≥ 5 72 ± 33 < 5 100 *p* = 0.44	≥ 5 89 ± 14 < 5 93 ± 12 *p* = 0.38	≥ 5 92 ± 143 < 5 88 ± 15 *p* = 0.42
Financial problems	≥ 5 29 ± 36 < 5 33 ± 28 *p* = 0.20	≥ 5 27 ± 33 < 5 39 ± 34 *p* = 0.87	≥ 5 27 ± 37 < 5 39 ± 24 *p* = 0.029	≥ 5 32 ± 34 < 5 28 ± 34 *p* = 0.89	≥ 5 33 ± 27 < 5 30 ± 35 *p* = 0.15	≥ 5 36 ± 40 < 5 66 ± 0 *p* = 0.31	≥ 5 28 ± 24 < 5 19 ± 32 *p* = 0.21	≥ 5 20 ± 26 < 5 33 ± 27 *p* = 0.59
Global quality of life	≥ 5 67 ± 29 < 5 72 ± 24 *p* = 0.44	≥ 5 62 ± 22 < 5 73 ± 22 *p* = 0.04	≥ 5 66 ± 28 < 5 77 ± 24 *p* = 0.027	≥ 5 66 ± 23 < 5 77 ± 22 *p* = 0.01	≥ 5 65 ± 16 < 5 70 ± 29 *p* = 0.06	≥ 5 57 ± 26 < 5 91 ± 0 *p* = 0.19	≥ 5 82 ± 18 < 5 75 ± 30 *p* = 0.23	≥ 5 79 ± 19 < 5 80 ± 33 *p* = 0.24

EORTC-QoL-C30: The European Organization for Research on the treatment of Cancer Questionnaires Quality of Life-C30

Table 6: Relation between gender, anxiety, depression and hopelessness levels, GRISS and EORTC-QoL-C30 scores

	Gender	Mean ± SD	*p* value	Number of patients
BDI	Female Male	12.1 ± 8 9.1 ± 8	0.7	N: 50
BHS	Female Male	5.7 ± 4.8 5.6 ± 4.3	0.5	N: 50
STAI -I	Female Male	35.3 ± 11.2 35.8 ± 11.7	0.79	N: 50
STAI-II	Female Male	43.7 ± 11.8 39.2 ± 9.1	0.22	N: 50
Frequency	Female Male	6 ± 1.7 4.8 ± 1.7	*p* = 0.51	N: 43
Communication	Female Male	6.2 ± 2.5 5.4 ± 2.6	*p* = 0.7	N: 43
Avoidance	Female Male	5.1 ± 1.8 4.2 ± 1.5	*p* = 0.17	N: 43
Touch	Female Male	6.1 ± 2.2 3.9 ± 2	*p* = 0.1	N: 43
Satisfaction	Female Male	2.9 ± 1.5 3.4 ± 1.4	*p* = 0.5	N: 43
Vaginismus	Female	6 ± 1		N: 22
Anorgasmia	Female	3.8 ± 0.9		N: 22
Premature Ejaculation	Male	6 ± 1.9		N: 21
Impotence	Male	4.6 ± 1.7		N: 21
Physical functioning	Female Male	68.6 ± 17.8 82.8 ± 15.5	0.58	N: 50
Role functioning	Female Male	77.4 ± 25.6 93.1 ± 13.7	0.001	N: 50
Emotional functioning	Female Male	79 ± 26.9 86.6 ± 15.7	0.075	N: 50
Cognitive functioning	Female Male	77.3 ± 26.3 89.8 ± 12.6	0.027	N: 50
Social functioning	Female Male	72.3 ± 35.9 89 ± 14.2	0.001	N: 50
Financial problems	Female Male	42 ± 39.2 20.8 ± 25.6	0.016	N: 50
Global quality of life	Female Male	59.7 ± 28.5 68.4 ± 22.3	0.5	N: 50

EORTC-QoL-C30: The European Organization for Research on the treatment of Cancer Questionnaires Quality of Life-C30

total scores according to GRISS in 28 patients. A comparison of the results of GRISS scores between the two age groups (< 60 age and ≥ 60 age) revealed high scores of vaginismus and premature ejaculation in the older group (p = 0.020, p = 0.038).

The results of the EORTC-QoL-C30 functional scales are summarized in Table 2. We ignored the quality-of-life symptom scale results because patients included in the present study were in remission. We detected low scores of global QoL in our patients. When we compared the results of EORTC-QoL-C30 function scales according to gender, the EORTC-QoL-C30 function scales (emotional functioning, social functioning, and cognitive functioning) of female patients were significantly lower than those of male patients (p = 0.001, p = 0.001 and p = 0.027). However, global QoL scores were similar between male and female patients. A comparison of the results of EORTC-QoL-C30 function scales according to age (< 60 age and ≥ 60 age) showed a significant difference in cognitive function (p = 0.035). No statistical difference was found for other functions in terms of age.

Discussion

The progressive development of lymphoma therapies has led to a notable prolongation of patient survival. The lymphoma survivors are exposed to increased risks of early and late adverse effects. We have examined the major aspects of treatment-related long-term side effects on anxiety, depression, sexual satisfaction and health-related quality of life status in lymphoma survivors.

In our study, we found that 26% of the patients had high depression values. The literature found that 44% of the patients presented results above the cut-off for depression [18]. The other study reported depression scores in 29% - 43% of patients with 14 different types of cancer [19]. High

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depression scores were reported in 23.6% of colorectal cancer patients [20]. Another study [21] showed that patients with breast and stomach cancer in Iran had the highest prevalence of anxiety (46%) and depression (48%). However, most of the studies on this subject in the literature have been conducted on cancer patients who survived after treatment and are limited to hematological patients. Anxiety and depression have been evaluated in DLBCL survivors [22] and found that the prevalence rates of anxiety and depression were 17% and 19%, respectively and these rates did not change over the 4-year study period. In another study [23], they found no change in the score of elevated depression for lymphoma survivors over time, but they detected a significant increase in the prevalence of elevated anxiety in their second interview. The increased anxiety in lymphoma survivors they reported was associated with the change in the frequency of medical appointments.

The anxiety and depression associated with the worry of relapse were reported among cancer patients in remission [24]. Patients with lymphoma can also have high depression and anxiety scores due to fear of relapse and chemotherapy. There may be a relationship between high scores of depression and anxiety with the stage of the disease. In our study, there was a significant relationship between a high hopelessness score with the advanced stage of the disease.

When we evaluated our patients' sexuality in terms of their depression and anxiety scores, there was a significant relationship between high depression scores and communication and impotence scores of the patients. Also, there was a significant relationship between high STAI-II scores with premature ejaculation, satisfaction and impotence scores of the patients. The GRISS scores of patients were very high, which meant sexual dysfunction. Thus, in the present study, the patients with higher levels of depression and anxiety were affected by sexual problems. This may be due to the psychological factors with their mood disorders. In the literature, a limited number of studies on lymphoma survivors focused on post-treatment sexual functioning. However, GRISS scores of metastatic LC patients were evaluated according to their anxiety or depression levels, but they could not find statistical significance in their study [25]. Shell JA, et al. investigated changes in sexual functions with lung cancer patients under treatment and found that normal sexual function was below normal, which worsened over time [26]. Depression and anxiety in women are often associated with an increase in female sexual dysfunction in cancer patients the literature. Yet there was no statistically significant difference between scores of anxiety and depression levels of patients according to gender.

In the present study, the GRISS scores were affected in patients with higher levels of depression and anxiety. In this study, the scores of satisfaction, premature ejaculation and impotence were significantly higher in patients with high anxiety scores compared with those presenting low anxiety scores. Among the patients with high depression scores, a significant difference was found in the impotence and communication scores when compared with patients with low depression scores.

In the present study, we found that 28 out of 50 patients (56%) had high scores in sexual function scales (frequency, communication, vaginismus and premature ejaculation). When we evaluated male patients according to GRISS, we found high scores in communication and premature ejaculation. We also detected high scores for touch, communication, avoidance, vaginismus and frequency when we evaluated female patients according to GRISS.

Quality of life is usually associated with the physical, psychological, sexual, and social factors of cancer patients [27]. The studies in the literature showed that all scale scores of EORTC-QoL-C30 in solid cancer patients were significantly associated with high anxiety and depression [18,28]. Magyari, et al. evaluated psychological distress and its risk factors among our HL survivors. They suggested that employment status and treatment-related long-term adverse effects played a critical role in the health-related QoL outcome [29]. In our study, the EORTC-QoL-C30 function scales (role function, cognitive function, emotional function and social function) of the patients with high depression scores and high anxiety scores were significantly lower, but we found similar global QoL scores in these two groups. We found that the functional scale scores of EORTC-QoL-C30 in lymphoma survivors were higher than in patients with solid cancer, but we showed similar global QoL scores in our patients. Male patients had significantly higher EORTC-QoL-C30 function scales than female patients. In our study, there was a statistically significant difference in the cognitive function of older patients. We found no statistically significant difference between age groups in terms of scores of other functions. The EORTC-QoL-C30 functional scales (role function and emotional function) of the patients with high communication, avoidance and premature ejaculation scores were significantly lower in our patients. However, it has been found that sexual dysfunction could negatively affect the global quality of life. The present study found the functional quality of life scores to be higher than other cancers in the literature, but the global quality of life was low.

The primary goal in the treatment of lymphoma is survival and recently survival times have significantly increased. However, in the follow-up of this population, inadequate attention is paid to sexual dysfunctions and reduction in quality of life. The quality of life of lymphoma survivors can be determined by the physical, psychological, social and sexual functions of patients. Although there are studies conducted on solid cancers in the literature, the studies on hematology related to this subject are limited. Because of social pressure and psychosocial factors, sexual dysfunction status and quality of life are ignored in our daily practice. Hat's why we planned this study. We thought to compare it with the control group, but considering the limitation of applying a questionnaire to the control group because our country is a developing country and has a more closed society, we found it appropriate to design the study in this way. The limitation of our study is that we did not have a control group.

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Conclusion

The lymphoma survivors had high anxiety and depression scores, reduced sexual functioning and low functioning scales of QoL in our study. There were associations between sexual dysfunction and low role functioning, emotional functioning and global QoL scores in our patients.

The small number of cases in our study and the absence of a control group represent limitations and there is a need to design a wide spectrum of prospective studies aimed at diagnosing the condition at the time of diagnosis and post-treatment period supported by laboratory data.

Acknowledgement

Professional medical writing support and editor assistance were not supported by the company.

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