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Posted Date: 4 September 2024

doi: 10.20944/preprints202409.0306.v1

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Abstract: Introduction: Patients with hematological malignancies undergo intensive treatment and prolonged hospitalization, thus having a variety of physical and psychosocial symptoms and worse quality of life (QOL). Aim: This study aimed to assess the QOL and investigate the symptoms of hospitalized hematological cancer patients. Methods: A cross-sectional study was conducted in the hematology clinics and day units of two general hospitals of Heraklion, Crete. Adult patients with hematological malignancy and an adequate understanding of the Greek language participated. A demographic questionnaire, the European Organization for Research and Treatment for Cancer quality assessment questionnaire (EORTC QLQ-C30), and the MD Anderson Symptom Inventory (MDASI) were used for data collection. The level of statistical significance was set at $p < 0.05$. Results: The sample consisted of 120 patients, 42.5% of whom were women, with a mean age of 65.6 years. The mean time from diagnosis was 33 months. The global health status of QoL had an average value of 47.1. The highest levels of QOL were found in the subscale of cognitive function (72.8) and the lowest in the role function (46.1). Among the of EORTC QLQ-C30 symptoms scale, the lowest score was found in nausea-vomiting (11.0) and the highest in fatigue (59.1). In the MDASI, in part I (core symptoms), higher levels, but also medium intensities were reported at fatigue (78.3%, mean 3.5), drowsiness (65.0, mean 3.3), and distress (65.8%, mean 2.8). In part II, enjoyment of life (85.8%, mean 5.1) had the highest and relation with other people (67.5%, mean 3.7) the lowest scores. The increase in the severity of the core symptoms (part I) was related to females (rho = 0.193, $p < 0.05$) and comorbidities (rho = 0.220, $p < 0.05$). It also related to a significant decrease in all functional domains and an increase in fatigue (rho = 0.571, $p < 0.05$) of the EORTC QLQ-C30 questionnaire. The increased global health status was related to males (rho = -0.185, $p < 0.05$) and physical functioning with younger age (rho = -0.331, $p < 0.05$), higher education (rho = 0.239, $p < 0.05$), fewer months from diagnosis (rho = -0.199, $p < 0.05$) and low comorbidity (rho = -0.209, $p < 0.05$). Finally, the increased global health status was significantly related to lower symptoms determined by the total average symptom score (-0.491, $p < 0.05$). Conclusions: The QoL of hematological cancer patients is significantly decreased during treatments due to a significant number of symptoms that must be taken into consideration for high-quality individualized care.

Keywords: quality of life; hematological cancer patient; hematological malignancies; symptoms; fatigue; MDASI

1. Introduction

Quality of life (QoL) is defined by the World Health Organization as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" [1]. It is a broad concept influenced in a complex way by physical health, psychological state, level of independence, social relations, and reactions to important characteristics of people's environment. Quality of life is also called "subjective well-being". The multidimensionality of QoL refers to the coverage of a broad range of content, including physical, functional, emotional, and social well-being [2]. Ultimately, QoL is a multidimensional and subjective concept interpreted and defined by each individual reflecting different approaches to the topic [2,3].

QoL for a person with a chronic illness such as cancer is a matter of particular value because the disease itself combined with treatments' toxicity, causes great burden and distress to cancer patients and their families [4]. Hematological malignancies are a heterogeneous disease group that requires aggressive, urgent, prolonged, and demanding treatment. Patients with malignant hematological malignancies are chronic patients who face significant physical problems in their daily living, social interactions and mental balance due to anticancer therapies, frequent hospitalizations, and transfusions [5]. These factors, combined with many treatments' toxicities and adverse events, provoke also severe distress and psychological burden leading to a worsening in their QoL [6]. The observed poor QoL exists regardless the type and stage of the disease and the type of treatment [5].

The disease and treatments effects also induce various symptoms and problems that lead to high levels of unmet supportive care needs among hematological cancer patients. In terms of physical needs, fatigue and memory loss are the most common. Prevalent needs are mainly informational, followed by psychological/emotional and physical needs [7].

The assessment of QoL through symptoms experienced by patients with hematological malignancies is a useful indicator for designing or selecting appropriate interventions for each patient and adjusting the treatment protocols according to the arising problems and needs. Timely and individualized intervention reduces the prolonged hospital stay, alleviates these symptoms and improves their overall well-being and its adverse effects on QoL [8].

Thus, the present study aimed to assess QoL and the reported symptoms of hospitalized hematological cancer patients and investigation of related factors.

2. Materials and Methods

2.1. Setting & Sample

A cross-sectional study was performed using a convenience sample of 120 hospitalized patients treated in the hematology department and the hematology day unit of two general hospitals in Heraklion, Crete.

The sample included patients diagnosed with hematological malignancy who were over 18 years old, and had the ability to understand, read, and write in Greek. Patients who were hospitalized at the diagnosis stage of their disease and patients who had a severe mental illness or dementia and were unable to complete the questionnaires were excluded from the sample.

2.2. Instrumentation

Patients completed a set of questionnaires that included sociodemographic and clinical characteristics (gender, age, marital status, education level, living with, employment, residence, time from diagnosis, comorbidities), the European Organization for Research and Treatment of Cancer (EORTC), Core Quality of Life Questionnaire (QLQ-C30, version 3.0) and the MD Anderson Symptom Inventory (MDASI).

The EORTC QLQ-C30 v.3 instrument assesses self-reported QoL in cancer patients [9]. It consists of 30 questions, divided into five functional scales (physical, role, emotional, cognitive, and social functioning), three symptom scales (fatigue, pain, and nausea/vomiting), and overall health and QoL scale. The questionnaire also presents six single items: dyspnea, insomnia, appetite loss, constipation, diarrhea, and financial difficulties. Patients assessed their functional level and symptoms severity on a Likert scale (1=not at all to 4=very high) and their global health status/QoL on a Likert scale ranging from 1=very poor to 7=excellent. Scale scores were linearly transformed into scores ranging from 0–100, so they are calculated from 0 to 100. Higher scores mean better functionality and quality of life for the functional subscales and overall health and QoL. Higher scores mean better functionality and quality of life for the functional subscales and overall health and QoL For symptom subscales, a higher score indicates more severe symptoms. The Cronbach's alpha coefficient for this study was 0.968. The validation of the questionnaire in Greek revealed a valid and reliable tool [10]. The Cronbach for the study was 0.894.

The MDASI is used to assess the presence and severity of cancer-related symptoms experienced by patients with cancer and their impact on daily living in the last 24 hours. The questionnaire consists of two parts. The core MDASI (part I) consists of 13 symptom items and rated based on their presence and severity. Each symptom is rated on an 11-point numeric scale ranging from 0 (not present) to 10 (as bad as you can imagine). In part II of the questionnaire, patients rate how symptoms interfere with their daily living (general activity, mood, work, relationships with others, walking, and enjoyment of life). These range from 0 (did not interfere) to 10 (interfered completely). The Greek version of MDASI was translated and validated by Mystakidou et al., 2004 [11].

2.3. Statistical Analysis

Data analysis was performed using the SPSS statistical program (IBM Corp. Released 2019, IBM SPSS Statistics for Windows, v.26.0, Armonk, NY: IBM Corp.). The significance level was set at p=0.05.

The frequency distributions of the patients' descriptive and clinical characteristics were initially calculated. The measurement score distributions of the EORTC QLQ-C30 and MDASI were tested using the Blom method (QQplot) while the reliability coefficients were calculated on a case-by-case basis using the Cronbach method. Due to asymmetry in most subscales of the two scales, the non-parametric Spearman correlation method was used, while the Kruskall-Wallis method was used to compare their scores.

The hierarchical cluster analysis method was used to estimate the grouping of the core symptoms (part I) of MDASI. The symptoms were used as binomial transformations (1: presence & 0: absence), while the Euclidean distances of these binomial data were estimated by the Ward method. Finally, multiple linear regression (correlation) was conducted with the EORTC QLQ-C30 (Global Health Status) and the characteristics of the patients and MDASI.

2.4. Ethics

The research was carried out after permission from the hospitals' ethics and research committee. Patients were informed verbally and written, and they signed an informed consent before their participation in the study. In addition, anonymous completion of questionnaires and code assignments ensured the participant's personal data protection. Additional clinical data from their medical records were obtained, after relevant permission.

3. Results

3.1. Patients' Characteristics

Demographic and clinical data of the 120 patients are presented in Table 1. Their mean age was 65.6 years (± 17.5). 42.5% were women, 45.8% were between 60-79 years, 68.3% were married or cohabiting, 42.5% had received primary education, 16.7% lived alone and 71.7% lived in an urban area. The mean time from diagnosis was 33 months (1-276) and 36.7% of the sample had comorbidities.

Table 1. Descriptive characteristics of the 120 patients with hematological malignancies.

		N	%
Gender	*men / women*	69 / 51	57.5 / 42.5
Age (years)	*Mean age ± (min-max)*	65.6 ± 17.5 (18.7-94.3)	
	<60	41	34.2
	60-79	55	45.8
	80+	24	20.0
Marital Status	*Unmarried/Divorced/Widowed*	38	31.7
	Married, Cohabitation	82	68.3
Education	*Primary school*	51	42.5
	Middle school	22	18.3
	High school	23	19.2
	University	24	20.0
Living alone	*Yes*	20	16.7
	No	100	83.3
Employment	*Unemployed/Retired/Housekeeping*	89	74.2
	Employees	25	20.8
	Freelancers/Farmers	6	5.0
Residence	*Urban area*	86	71.7
	Rural Area	34	28.3
Time from diagnosis (months)	*Mean (median) (min-max)*	33 (48)	(1 - 276)
Comorbidities	*None*	44	36.7
	1	40	33.3
	2+	36	30.0

3.2. Descriptive Data of Variables

The global health status/QoL of the EORTC QLQ-C30 indicated a mean score of 47.1. The highest mean score in functioning scale was found on the cognitive (72.8) and the lowest in that of roles (46.1). Among the symptoms of QLQ-C30, a lower score was found in nausea-vomiting (11.0) and the highest score (meaning the worst symptom) in fatigue (59.1) and dyspnea (44.7) (Table 2). From the core symptoms (part I) of the MDASI (Table 3), fatigue was reported at a higher frequency (78.3%), but also at moderate intensity (3.5 on a scale of 0 to 10), followed by drowsiness (65% and 3.3), while vomiting had the lowest frequency (15.8% and 0.6). In part II of the MDASI, enjoyment of life (85.8% and 5.1) and walking activity (82.5% and 5.1) had the highest frequency but also medium intensity.

Moreover, Table 4 presents, the overall scores of symptom intensity of the MDASI. It was found that part II, which shows the interference of symptoms with the patient's daily living, had a significantly higher average intensity score than part I of the MDASI ($p < 0.001$). However, the total average symptom score was 2.8.

Table 2. Descriptive characteristics of EORTC QLQ-C30.

EORTC QLQ C30 Subscales	Mean	SD*	Median	Range
Global health status/QoL	47.1	21.5	50.0	0-100
Functional scales (*Higher score shows better QoL)*				
Physical functioning	58.1	25.5	60.0	0-100
Role functioning	46.1	32.8	41.7	0-100
Emotional functioning	64.7	27.3	75.0	0-100
Cognitive functioning	72.8	28.2	83.3	0-100
Social functioning	58.9	31.3	66.7	0-100
Symptom scales/items (*Lower score show better QoL*)				
Fatigue	59.1	25.6	66.7	0-100
Nausea and vomiting	11.0	21.4	0,0	0-100
Pain	34.9	31.5	33.3	0-100
Dyspnea	44.7	31.9	33.3	0-100
Insomnia	35.8	34.1	33.3	0-100
Appetite loss	33.3	34.6	33.3	0-100
Constipation	23.6	32.5	0.0	0-100
Diarrhea	15.6	28.6	0.0	0-100
Financial difficulties	28.6	32.4	33.3	0-100
*SD: standard deviation				

Table 3. Hierarchical classification of the intensity and frequency of symptoms of MDASI.

Symptom Items		**Mean**	**SD***	**Median**	**Min**	**Max**	**N**	**%**
Part I[1]	Fatigue	3.5	3.2	2.0	0.0	10.0	94	78.3
	Drowsiness	3.3	3.4	2.0	0.0	10.0	78	65.0
	Distress	2.8	3.1	1.0	0.0	10.0	79	65.8
	Dry mouth	2.8	3.3	1.0	0.0	10.0	74	61.7
	Sadness	2.8	3.2	2.0	0.0	10.0	72	60.0
	Disturbed Sleep	2.5	3.0	1.0	0.0	10.0	72	60.0
	Anorexia	2.2	3.0	1.0	0.0	10.0	62	51.7
	Numbness & Tingling	2.1	3.1	0.0	0.0	10.0	52	43.3
	Pain	1.9	2.8	0.5	0.0	10.0	60	50.0
	Constipation	1.7	3.0	0.0	0.0	10.0	40	33.3
	Memory problems	1.6	2.7	0.0	0.0	10.0	51	42.5
	Shortness of breath	1.5	2.8	0.0	0.0	10.0	46	38.3

	Nausea	1.2	2.4	0.0	0.0	10.0	40	33.3
	Diarrhea	1.2	2.7	0.0	0.0	10.0	29	24.2
	Vomiting	0.6	1.7	0.0	0.0	10.0	19	15.8
Part II²	Enjoyment of life	5.1	3.6	5.0	0.0	10.0	103	85.8
	Walking	4.7	3.5	4.0	0.0	10.0	99	82.5
	Mood	4.4	3.4	4.0	0.0	10.0	99	82.5
	Work	4.3	3.7	4.0	0.0	10.0	90	75.0
	General Activity	4.2	3.4	4.0	0.0	10.0	96	80.0
	Relations with other people	3.7	3.6	3.0	0.0	10.0	81	67.5

[1] Response rating from 0: symptom not present up to 10: the worst you can imagine.

[2] Response rating from 0: symptom did not interfere to 10: symptom interfere completely.

*SD: standard deviation

Table 4. MDASI Symptom intensity score.

MDASI	Mean	SD*	Median	Min	Max
Part I [1]	2.1	2.0	1.5	0.0	10.0
Part II [2]	4.4	3.1	4.7	0.0	10.0
Total Average Symptom Score	2.8	2.4	2.1	0.0	10.0

1 Response rating from 0: symptom not present up to 10: the worst you can imagine.

2 Response rating from 0: symptom did not interfere to 10: symptom interfere completely.

-Mann-Whitney control among the two symptom groups, p <0.001

*SD: standard deviation

3.3. Correlations between QOL and Patients' Symptoms

Table 5 presents the univariate correlations of the scores of the EORTC QLQ-C30 and the MDASI. Significant correlations were observed between the subscales of the two scales in almost all the analyses. Specifically, an increase in the symptom intensity was related to a decrease in functionality scales of QOL (negative correlations, $p < 0.05$ and an increase in the symptoms of QOL and, therefore, a worsened QOL (positive correlations, $p < 0.05$). For example, it was observed that an increase in the symptoms intensity of part I of MDASI was related to a decrease in the cognitive functional scale of the EORTC QLQ-C30 (rho = -0,600, $p < 0.05$) and an increase in fatigue of the EORTC QLQ-C30 (rho = 0.571, $p < 0.05$).

Moreover, multiple linear regression was conducted between the global health status of the EORTC QLQ-C30 and the total average symptom score of the MDASI. Increased global health status was significantly correlated with fewer symptoms, as determined by the total average symptom score (β=-0,491, $p<0.001$).

Table 5. Correlations between EORTC QLQ C30 and MDASI.

Measurement of Symptom Intensity $^{\alpha}$			
	Part I	**Part II**	**Total Average Score**
	rho-Spearman		
Global Health Status/QOL	-0.426*	-0.500*	-0.491*

Functionality (higher score → better QOL)			
Physical	-0.380*	-0.400*	-0.418*
Role	-0.257*	-0.387*	-0.337*
Emotional	-0.560*	-0.458*	-0.549*
Cognitive	-0.600*	-0.509*	-0.596*
Social	-0.402*	-0.470*	-0.471*
Symptoms (lower score → better QOL)			
Fatigue	0.571*	0.596*	0.622*
Nausea and vomiting	0.488*	0.340*	0.470*
Pain	0.436*	0.464*	0.493*
Dyspnea	0.406*	0.356*	0.406*
Insomnia	0.355*	0.238*	0.332*
Appetite loss	0.456*	0.487*	0.508*
Constipation	0.378*	0.321*	0.389*
Diarrhea	0.214*	0.247*	0.256*
Financial difficulties	0.245*	0.193*	0.253*

α Highest scores (→10) indicated higher symptom intensity.
* p<0.05

3.4. Correlations between QOL and Patients' Characteristics

As shown in Table 6, there are sporadic significant correlations between QOL and patients' characteristics. For example, increased Global health status/QoL was related to the male sex (rho = -0.185, p <0.05), while the physical functioning scale was related to younger age (rho = -0.331, p <0.05), higher education (rho = 0.239, p <0.05), fewest months after diagnosis (rho = -0.199, p <0.05) and with fewer concomitant diseases (rho = -0.209, p <0.05). Regarding the symptoms items, fatigue was associated with older age (rho = 0.277, p <0.05), nausea and vomiting with female gender (rho = 0.196, p <0.05), younger age (rho = -0.201, p <0.05), living in urban areas (rho = -0.190, p <0.05) and dyspnea with older age (rho = -0.267, p <0.05), and the presence of more comorbidities (rho = 0.232, p <0.05).

Table 6. Correlations between EORTC QLQ C30 and patients' characteristics.

	Gender	Age	Marital Status	Education	Living alone	Residence	Time since diagnosis	Comorbidities
	rho-Spearman							
Global Health Status/QOL	-0.185*	-0.145	0.057	0.176	-0.051	0.092	-0.059	-0.160
Functionality (higher score → better QOL)								
Physical	-0.096	-0.331*	0.052	0.239*	-0.019	0.009	-0.199*	-0.209*
Role	0.002	-0.232*	0.030	0. 099	-0.031	-0.010	0.016	0.011
Emotional	-0.150	-0.192*	-0.029	0.143	-0.089	0.011	-0.019	-0.284*
Cognitive	-0.004	-0.176	-0.052	0.062	-0.098	-0.071	-0.197*	-0.173
Social	0.012	-0.167	-0.029	0.124	-0.099	-0.081	-0.199*	-0.098
Symptoms (lower score → better QOL)								
Fatigue	0.057	0.277*	0.131	-0.102	0.020	-0.060	0.080	0.162
Nausea and vomiting	0,196*	-0.201*	0.023	0. 036	0.059	-0.190*	-0.137	0.094
Pain	0,114	0.073	-0.085	-0.167	0.016	-0.061	0.115	0.192*
Dyspnea	0.009	0.267*	0.027	-0.175	-0.043	0.016	0.103	0.232*
Insomnia	0.136	-0.008	0.085	0.003	0.014	-0.087	0.000	0.165
Appetite loss	0.034	0.083	0.068	0.050	0,084	-0.169	-0.066	0.130
Constipation	0.160	-0.052	-0.008	0.038	0.038	-0.132	-0.227*	0.153
Diarrhea	-0.001	0.129	-0.023	-0.120	0.138	0.004	0.079	0.167
Financial difficulties	0.011	0.091	-0.168	-0.081	0.015	-0.021	0.237*	0.113
* p-value<0.05								

3.5. Correlations between Symptoms and Patients' Characteristics

The increase in the severity of the core symptoms of the MDASI was related to the female sex (rho=0.193, p<0.05) or the presence of more concomitant diseases (rho=0.220, p<0.05). Also, the total average symptom score seems to increase as the presence of more concomitant diseases increases (rho=0.179, p<0.05) (Table 7).

Table 7. Correlations between MDASI and patients' characteristics.

	Gender	Age	Marital Status	Education	Living alone	Residence	Time since diagnosis	Comorbidities
	rho-Spearman							
Part I	0.193*	0,088	0.062	-0.154	0.150	-0.063	0.109	0.220*
Part II	0.080	0.145	-0.015	-0.131	0.156	-0.054	0.036	0.085
Total Average Symptom Score	0.163	0.108	0.005	-0.134	0.156	-0.075	0.076	0.179*
* p-value<0,05								

4. Discussion

The current study investigated the QOL and the symptoms of hospitalized patients with hematological malignancies. The results showed that patients with hematological malignancies have worse QOL, and there is a strong correlation between QOL and the symptoms of the disease and its treatments.

In the present study, EORTC-QLQ-C30 assessment found that the cognitive function had the highest and the role function had the lowest levels. The QOL of 400 blood cancer patients in Pakistan was assessed using the EORTC-QLQ-C30. The highest scores were observed in the physical function, and the lowest in the emotional function followed by the cognitive function. Women and those patients treated in private sector healthcare facilities and in tribal and rural settings had relatively better QOL [12]. Also, physical problems (fatigue, dyspnea) are the most widely reported among patients with myelodysplastic syndromes and then social function and role function are significantly impaired. Among these patients, worse QOL has been correlated with female gender, older age, poor performance status, more comorbidities and sleep disturbances [13]. In addition, in a study of 68 Turkish patients with Hodgkin lymphoma, role function had the highest scores, while emotional function had the lowest [14]. Altogether, the QOL of patients with hematological malignancy was significantly worse in comparison with the general population ($p<0.001$) but similar when compared with solid tumors and other chronic disabling diseases and lower than that due to Multiple Sclerosis ($p= 0.032$) [15].

The results of our research showed that the most aggravating symptoms for patients with hematological malignancies were pain and fatigue, which gradually bring restrictions to their daily activities. It is worth mentioning that the physical needs of patients with hematological malignancy are of the most frequently mentioned categories of unsatisfied supportive care needs [7]. With the increasing research and the variety of available treatments for hematological malignancies, these diseases have turned into chronic diseases with a very high symptom burden [16].

Similar results to our study were reported by Manitta et al., (2011) who evaluated symptoms with MDASI in 180 patients in Australia and concluded that the main symptom was fatigue (69%) and the least reported was vomiting (9%) [17]. Patients had a significant physical and psychological burden of symptoms, with a total average of 8.8 (± 5.9) symptoms and generally had low levels of QOL. In addition, in a 2011 study by Priscilla et al., with 105 hospitalized patients with hematological malignancy in Malaysia, the four most common symptoms identified were fatigue, financial difficulties, reduced role function, and decreased social function [18]. Likewise, 110 inpatients and outpatients with Non-Hodgkin Lymphoma from 7 hospitals in Ankara of Turkey, mainly reported fatigue, hair loss and taste changes [19].

Moreover, 65% of our sample had sleep problems (drowsiness, insomnia) based on the MDASI. In a study in Japan with 153 hospitalized patients with hematological malignancies, insomnia was found in 60% [20]. Cancer patients often suffer from many physical, psychosocial and mental problems, including sleep problems, especially insomnia. The prevalence of insomnia in cancer patients has been reported to be 50% or more, which is much higher in the general population (10.2–28.5%) [21]. Sleep problems are among the five most common symptoms affecting leukemia patients [22]. In hematological cancer patients, sleep problems are often coupled with higher levels of fatigue, because they tend to leave patients without adequate energy to move and result in fatigue [23].

In general, though, patients with solid tumors face the same symptoms. The most frequent side effects of chemotherapy reported by 153 Greek cancer patients using the MDASI, were fatigue, nausea, constipation, anorexia, vomiting, pain, sadness and anxiety [24]. Alamanou et al., (2016), when assessing 211 Greek cancer patients using the MDASI, found that the most intense primary symptoms were sadness, fatigue, sleep disorders, and anxiety while the less intense symptoms were vomiting, nausea and diarrhea [25].

Regarding the correlation of demographics with symptoms and QOL, the symptoms of the disease and the side effects of treatment have a greater impact on QOL in women than in men. Women had an overall average symptom score higher than men. In contrast, in the study of La Nasa et al., (2020), there did not appear to be a significant difference between the two genders regarding their QOL [15]. Another study of 115 leukemia patients in Iran showed that there was a significant correlation between physical function with gender, educational level, and marital status as well as showed a significant correlation between fatigue and pain [26]. Also, in the study of Pamuk et al., (2012) gender was not found to be associated with QOL or symptoms, only older age had a negative effect on physical function (as seen in our study)]. These researchers, in Northwestern Turkey evaluated 332 patients with hematologic malignancies. Their results are very much in line with our study. The highest average symptom score was fatigue, followed by pain, insomnia and loss of appetite, ending to nausea and vomiting. 73.1% of patients had reduced financial function, 39% had reduced physical function, 28.7% had reduced role and social function, 24.5% had reduced emotional function and 15.4% had reduced cognitive function [27].

In addition, our results revealed that global health status was related to male sex while physical functioning was related to younger age, higher education, fewest months after diagnosis and with less comorbidity. Nausea and vomiting were also associated with the female gender, fatigue was associated with older age and dyspnea with the presence of more comorbidity. The QOL of 131 survivors with hematological malignancy was assessed by Immanuel et al., (2019) using the EORTC QLQ-C30 questionnaire. Participants' age was negatively correlated with global health status, physical functioning and role functioning. Men had better physical functioning and reported fewer pain and sleep loss symptoms than women. The employed participants reported better physical, role, cognitive, and social functioning than the unemployed. On the other hand, unemployed reported more fatigue, pain, dyspnea, sleep loss, appetite loss and constipation compared with the employed ones [28].

Limitations of the study include the short period of time that the study was conducted, and the relatively small sample from only two hospitals. It was also a cross-sectional study that did not allow to find changes over time. Furthermore, treatments and the questionnaires were self-completed by patients, so they are subject to subjectivity.

5. Conclusions

Patients with hematological malignancies endure many treatments and have a variety of physical and psychosocial symptoms, the most common of which are pain and fatigue, which significantly affect their QOL. Half of the patients in our study had moderate or low global health status of QOL. The cognitive function had higher levels and the role function had lower levels. Also, QOL and, specifically, the global health status subscale were associated with highly reported symptoms.

This specific issue under study is a complex one and demands further investigation. Future, multicenter and prospective studies will lead to more valid and generalizable results for the QOL and symptoms of hospitalized patients with hematological malignancies. Future studies in this area could also focus on specific types of hematological malignancies and patients with advanced disease who face even more challenging issues.

The present study could guide healthcare professionals to more easily identify high-risk patients for reduced QOL and increased symptoms, problems, and needs. A clear understanding of the specific issues that are most important to this group of patients, through systematic evaluation, will help identify their most relevant concerns during treatment and plan appropriate interventions to provide more personalized, high-quality care. The continuous investigation of the changing symptoms and needs of this group of patients will contribute to their successful coverage.

Author Contributions: Conceptualization, Theocharis Konstantinidis; Data curation, Eleftheria Tsagkaraki and Evgenia Chasouraki; Formal analysis, Maria Saridi; Investigation, Ioanna Tsatsou and Evgenia Chasouraki; Resources, Theodoula Adamakidou; Supervision, Ourania Govina; Visualization, Theocharis Konstantinidis and Ioanna Tsatsou; Writing—original draft, Theocharis Konstantinidis and Ioanna Tsatsou; Writing—review & editing, Theocharis Konstantinidis and Ioanna Tsatsou.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the scientific committee of the hospitals (Prot. No. 1st hospital:11630/1-6-21, 2nd hospital 12616/26-7-21).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

Conflicts of Interest: The authors declare no conflicts of interest.

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