

Evaluation of Health-Related Quality of Life in Adults with Leukemia undergoing Chemotherapy Treatment

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Abstract

Aim: To evaluate the Health-Related Quality of Life in adults with leukemia undergoing chemotherapy treatment.

Method: This was an exploratory, descriptive, cross-sectional, quantitative study conducted at the chemotherapy center of a Teaching Hospital in the state of São Paulo, Brazil. Two data collection instruments, the clinical and sociodemographic data questionnaire and the European Organization for Research and Treatment of Cancer 30 item Core Quality of Life Questionnaire (EORTC-QLQ-C30), were used to evaluate the Health-Related Quality of Life. The quantitative analysis of the data was performed using the SPSS, version 20.0 software. Results: The General Health Status scale (GHS/QoL) presented a mean of 64.7, showing that the patients believed that their health was good, despite the oncological diagnosis and treatment. In the physical functions, emotional and social scales the means ranged from 61.0 to 67.3, showing an intermediate level of satisfaction. However, the role performance scale presented a low mean of 45.5, with the identification of reports of withdrawing from the family and employment, retirement and hospitalization.

Implications for Nursing: We consider it very important that the nursing team perform an accurate evaluation, using specific Health-Related Quality of Life instruments for each patient undergoing chemotherapeutic treatment, considering that this evaluation works as a health indicator.

Keywords: Health-Related Quality of Life, Leukemia, Chemotherapy.

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I. Introduction

Cancer is a term generally used to represent a set of more than 100 diseases, which have in common disordered cellular growth and invasion of tissues and organs, which can lead to metastases in other regions of the body. The number of cancer deaths is increasing each year, with approximately 8.2 million people dying annually from cancer worldwide. In 2013 Brazil registered 189,454 cancer deaths, while in 2016 it was estimated that there were more than 596,000 cases of the disease [1]. Among the various types of cancer, there are hematological neoplasms, which are diseases that lead to changes in the blood or tissues that form it, as is the case of leukemia, which is a malignant disease that affects the white blood cells, also known as leukocytes. Leukemia is a type of cancer that has a high patient mortality rate, with it being estimated that among the 352,000 people who develop leukemia every year worldwide, approximately 265,000 (75.3%) die from the disease [2]. In Brazil the estimated number of new cases for 2016 was 10,070, with 5,540 new cases in men and 4,530 in women [1]. Leukemia can be classified according to how quickly the disease progresses, with acute leukemia, where the disease worsens rapidly, and chronic leukemia, in which the worsening of the disease is usually slower. Leukemia can also be classified according to the cells types it affects, which can be lymphoid or myeloid cells [3].

One of the main treatments for this type of cancer is chemotherapy, or polychemotherapy, which consists of an association of drugs, the objective of which is to destroy the leukemic cells, so that the marrow can return to producing normal cells [3]. The use of polychemotherapy provides an improvement in the efficacy of treatment of neoplastic diseases, with a reduction in toxicity, this being a positive factor for the patient [4]. Chemotherapeutic medications act on cells in the process of cellular division, interfering with their growth and division, thus having a much greater action on the cancer cells because they have a higher rate of cell division than normal cells [3]. However, chemotherapy not only affects cancer cells, but also normal cells, with the

treatment causing numerous side effects for the patient, the most common being diarrhea, constipation, nausea, vomiting, leucopenia, alopecia and mucositis [4].

These side effects resulting from chemotherapy treatment are associated with the concerns of the patient related to the disease, such as risk of secondary malignancy, symptoms of the disease itself and cytotoxicity, which may lead to prolonged and delayed effects, these being issues relevant to family and work. These concerns address multidimensional issues related to the Health-Related Quality of Life (HRQoL) of these patients, which is adversely affected during the period of cancer treatment [5]. The HRQoL is associated with factors relevant to the health of the individual and all aspects that influence it, such as diseases and/or injuries, health interventions and policies, the impacts on functional status and damage that can be generated, as well as individual perceptions of well-being and social factors [6,7]. Incapacity, dependence and loss of autonomy are common in leukemia patients who undergo chemotherapy, therefore, it is essential that health professionals recognize the needs and limits of each patient and carry out interventions and provide guidance for their improvement [8]. Accordingly, it is important to evaluate the HRQoL of these patients, aiming for more effective and holistic treatment. The study of the health-related quality of life in patients with leukemia undergoing chemotherapy is fundamental for the identification of the domains affected and for the planning of the nursing interventions/care, in order to provide humanized care that responds to the individual needs of the patient. Considering the above, the general aim of the study was to evaluate the Health-Related Quality of Life in adults with leukemia undergoing chemotherapy treatment.

II. Materials and methods

This descriptive, exploratory, cross-sectional, quantitative study was performed at the Chemotherapy Center of a public hospital in southeastern Brazil.

The population was constituted by patients with leukemia, attended at the Chemotherapy Centre and who were in the middle and/or at the end of the chemotherapy treatment. This period was chosen because it was necessary that the patient had already undergone some sessions of the chemotherapy treatment in order to report the main side effects or complaints presented. The sample consisted of 26 patients, who agreed to participate in the study by signing the consent form. The inclusion criteria were: to be over 18 years of age, to have a diagnosis of leukemia and to be in the middle or at the end of the chemotherapy treatment. Patients who were at the beginning of the chemotherapeutic treatment and those with difficulty understanding simple questions that indicated awareness of the environment, such as date of birth, address and day of the week, were excluded.

Data collection was carried out from March to June 2017. A questionnaire was used for the categorization of the data of the patients, which was constructed and duly validated for the collection of the socio-demographic data: gender, age, marital status, occupation, monthly income, schooling level and religion; and clinical/therapeutic data: treatment adopted and symptomatology. For the evaluation of the HRQoL, the European Organization for Research and Treatment of Cancer 30 item Core Quality of Life Questionnaire (EORTC-QLQ-C30) was used, which is an HRQoL questionnaire validated for the Brazilian population, for specific use with cancer patients.

The EORTC-QLQ-C30 includes five functional scales: physical, cognitive, emotional, social, and role performance. It also considers three scales of symptoms: nausea and vomiting, fatigue, and pain; a general quality of life and health scale (GHS/QoL), and six other items assessing symptoms commonly reported by cancer patients: dyspnea, lack of appetite/anorexia, insomnia, constipation, and diarrhea, with it also containing one item that evaluates the financial impact. The responses are based on the week prior to the interview.

The QLQ-C30 generates scores for the functional and symptom scales. Each score is transformed into a scale from 0 to 100, according to the EORTC guidelines, where zero denotes the worst functioning and 100 the best functioning in the functional scales and the GHS/QoL; while in the symptom scales and items 100 indicates more symptoms and 0 no symptoms present. The data obtained were organized in an Excel spreadsheet and exported to the Statistical Package for the Social Science (SPSS), version 20.0. Descriptive analysis of the data with absolute frequencies and percentages was performed. To test the reliability of the instruments, Cronbach's Alpha (α) internal consistency test was performed, with the result being $\alpha = 0.76$.

The research project was approved by the Research Ethics Committee, under authorization no. 56428716.7.0000.5393, with the confidentiality of the patients guaranteed, in compliance with Resolution 466/2012 of the National Health Council. All participants signed two copies of the consent form, one of which was retained by the participant and the other by the researcher.

III. Results

Of a total of 26 patients, 46.2% were female and 53.8% male. The predominant age group of the sample was that of 60 to 80 years, with the majority of subjects being married, retired, from the state of São Paulo, with complete elementary school education and Catholic, as shown in **Table 1**.

Table 1 - Frequency and percentage of the socio-demographic characteristics of the patients with leukemia undergoing chemotherapy in a university hospital of the state of São Paulo, Brazil, 2017 (n = 26).

Sociodemographic characteristics	N	%
Sex		
Female	12	46.2
Male	14	53.8
Age group		
20 - 40 years	6	23.1
40 - 60 years	6	23.1
60 - 80 years	13	50.0
≥ 80	1	3.8
Marital status		
Single	6	23.1
Married	14	53.8
Widowed	3	11.5
Other	3	11.5
Profession		
Retired	10	38.5
On leave	3	11.5
Public worker	1	3.8
Hairdresser	1	3.8
In the home	1	3.8
Cook	3	11.5
In charge of production	1	3.8
Electrician	1	3.8
Student	1	3.8
Physician	1	3.8
Farmer	1	3.8
Production assistant	1	3.8
Telemarketing operator	1	3.8
From		
Ribeirao Preto	9	34.6
São Paulo state	17	65.4
Level of education		
Incomplete elementary education	5	19.2
Complete elementary education	9	34.6
Incomplete high school	2	7.7
Complete high school	5	19.2
Incomplete higher	4	15.4
Complete higher	1	3.8
Religion		
No preference	2	7.7
Catholic	18	69.2
Evangelical	5	19.2
Spiritist	1	3.8

Regarding the type of leukemia, the diagnosis regarding acute myeloid leukemia was predominant, with the most commonly used chemotherapy drug being Cytarabine. The side effects highlighted in relation to of the chemotherapy protocol were physical effects such as tiredness, pain, hair loss, loss of appetite and taste, drowsiness, weakness, reddened skin, hematochezia, heightened sense of smell, general malaise and dizziness, as shown in **Table 2**.

Table 2 - Clinical-therapeutic characteristics of the patients with leukemia undergoing chemotherapy in a university hospital of the state of São Paulo, Brazil, 2017 (n = 26).

Clinical characteristics	N (%)	%
Diagnosis		
Chronic US* cell type leukemia	1	3.8
Acute lymphoid leukemia	4	15.4
Chronic lymphoid leukemia	3	11.5
Acute myeloid leukemia	13	50.0
Acute US* cell type leukemia	3	11.5
Chronic myeloid leukemia	2	7.7
Chemotherapy protocol		
Fludarabine	1	3.8
Asparaginase + Nilotinib + Methotrexate + Vincristine	1	3.8
Chlorambucil	2	7.7
Tretinoin + Daunorubicin	1	3.8
Methotrexate	1	3.8
Doxorubicin + Cytarabine	1	3.8
Rituximab + Fludarabine + Cyclophosphamide	1	3.8
Cytarabine	7	26.9
Imatinib + Cytarabine	1	3.8
Cytarabine + Hydroxyurea	1	3.8
Cyclophosphamide	1	3.8
Cytarabine + Daunorubicin	4	15.4
Tretinoin + Mitoxantrone	1	3.8
Methotrexate + Mercaptopurine	2	7.7
Imatinib + Hydroxyurea	1	3.8
Side effects of the chemotherapy		
Asymptomatic	5	19.2
Gastrointestinal effects: diarrhea, nausea, vomiting, weight loss	2	7.7
Physical effects: tiredness, pain, hair loss, loss of appetite, loss of taste, drowsiness, weakness, reddened skin, hematochezia, heightened sense of smell, general malaise, dizziness	10	38.5
Gastrointestinal + physical effects	9	34.6

*US Unspecified.

Table 3 represents the means and standard deviation of the QLQ-C30. The General Health Status (GHS/QoL) showed a mean of 64.70, demonstrating that the patients believed their health to be reasonable, despite the oncological diagnosis and treatment. In the physical functions, emotional and social scales the means ranged from 61.04 to 67.34, showing an intermediate level of satisfaction. However, the role performance scale presented a low mean of 45.53, with the identification of reports of withdrawing from the family and employment, retirement and hospitalization, with the age group being predominantly older adults.

Table 3 - Mean and standard deviation of the QLQ-C30 instrument scales (baseline) - Brazil, 2017

Scales and Symptoms	Mean	SD*
General Health Status (GHS/QoL)	64.7077	26.69852
Physical Function (PF)	61.0462	28.70170
Role performance (RP)	45.5308	40.71179
Emotional function (EF)	67.3423	31.52661
Cognitive function (CF)	75.6654	24.60458
Social function (SF)	62.2000	34.50164
Fatigue (FAT)	47.8346	33.81123
Nausea and vomiting (NAV)	19.8500	29.80522
Pain (Pain)	19.2192	33.22486
Dyspnea (DYS)	14.0962	30.06392
Insomnia (INS)	12.8115	25.06989
Loss of appetite (LAP)	42.2885	40.60842
Constipation (CON)	15.3808	32.97023
Diarrhea (DIA)	12.8115	26.78079
Financial difficulties (FDI)	37.1615	38.09059

*Standard Deviation

In the symptom scales, there was a predominance of fatigue with a mean of 47.83, followed by loss of appetite 42.28, nausea and vomiting 19.85, pain 19.21, constipation 15.38, dyspnea 14.09, insomnia 12.81 and diarrhea 12.81. Regarding financial difficulties, the mean of 37.16 revealed a considerable number of patients who, even though they were being treated in the Brazilian National Health Service (SUS), still had difficulties due to the complexity of the treatment regimen, which could also be related to the fact that the majority of the sample were from other municipalities and therefore had additional costs with transportation to receive the treatment.

IV. Discussion

According to the World Health Organization (WHO) cancer is a public health issue, particularly in developing countries, where 80% of the estimated 20 million new cases by 2025 are expected [1]. Thus, the importance of chemotherapy treatment and the impact of its side effects on the HRQoL of the patients are evident, objectifying the cure of the disease.

The study of HRQoL related to leukemia aimed to highlight, in the scientific literature, the domains affected, so that the management of the side effects can be performed in order to make the chemotherapy less traumatic, since there are not many studies in the literature about HRQoL in patients with leukemia undergoing chemotherapy. Thus, although a limitation of the study was the small number of subjects in the sample, the results are related to findings in the literature and have the potential to assist in the healthcare provided by the nurse. According to epidemiological data in Brazil, the predominance of cancer patients is characterized by higher incidence in the age group of over 40 years and in those with low education and low monthly income. These data reflect the findings of the present study regarding the age group, 13 (50%) from 60 to 80 years and in relation to the level of education, 9 (34.6%) with complete elementary school, corroborating another study conducted [1,9]. In addition, epidemiological data from 2015 showed that there was a higher incidence of leukemia in men and in the Southeast region of Brazil, as confirmed by the present study, with 14 (53.8%) male patients and 17 (65.4%) from the state of São Paulo [10]. In the evaluation of the clinical and therapeutic characteristics of the sample, the predominant diagnosis was acute myeloid leukemia (AML) with 13 (50%) cases, followed by 4 (15.4%) cases of acute lymphoid leukemia (ALL), corroborating another study that found 54% of the sample patients diagnosed with AML, followed by 25% diagnosed with ALL [11]. In adults, the frequency of AML corresponds to 90% of the cases diagnosed as leukemia, therefore, the incidence of AML increases with the age group and in male patients, as identified in the present study and in another study conducted in the southern region of Brazil [12].

Regarding the chemotherapy protocols, Cytarabine was the predominant chemotherapeutic agent used, in 7 (26.9%) of the cases, followed by the combination of Cytarabine + Daunorubicin, in 4 (15.4%) of the cases. This result can be attributed to the fact that Cytarabine is still the main choice of antineoplastic induction treatment for AML, and in many cases it is associated with an Anthracycline, such as Daunorubicin. Other therapeutic modalities have been studied, such as molecular therapies, to be used in combination with chemotherapy or in isolation [13]. Although the chemotherapy treatment aims to combat malignant tumors, it also causes a series of adverse effects, as it does not only affect the leukemic cancerous blood cells. Cytotoxic drugs systemically influence other cells of the body, causing a series of adverse effects, among which the most common reactions are nausea, vomiting, alopecia, loss of appetite, constipation, diarrhea, and fatigue [14].

Among the side effects of chemotherapy, fatigue is one of the most frequent, occurring in 65% to 95% of patients being treated, with it being one of the most debilitating for the patient, since it compromises activities of daily living and, consequently, the HRQoL. Fatigue is a symptom characterized as a multifactorial phenomenon that is difficult to treat and causes physical and physiological problems, stress, discomfort, decreased motivation and impaired cognitive functioning, which negatively affect the HRQoL of the patient [15,16]. The present study identified a predominance of fatigue in the symptom scale, with a mean of 47.83, which was also identified in other studies with patients with hematologic cancer and AML [8,16], showing the importance of interventions focused on this symptom, since it negatively affects the HRQoL of the patients being treated. According to a study performed with hematologic cancer patients, fatigue can be defined as “an unpleasant physical sensation with cognitive and emotional symptoms described as tiredness and not relieved by the use of usual energy restoration strategies” [8]. Thus, it is possible to relate it to the role performance domain, which presented the lowest mean (45.53) among the domains of the functional scale, corroborating data from another study [8], which also found a significant relationship between fatigue and the role performance functional scale.

Because it is a multifactorial symptom, which compromises daily activities, fatigue negatively affect the role performance, thereby leading patients to social, family and work-related withdrawal, and sometimes preventing them from even performing leisure activities. In the symptom scale, loss of appetite also showed a relatively high mean of 42.28, which may be related to the chemotherapy treatment and its side effects such as loss of taste, nausea and vomiting. An integrative review of the literature [17] regarding HRQoL in patients with advanced cancer highlighted that symptoms such as pain, nausea and vomiting imply increased morbidity and

mortality in patients, since these symptoms affect approximately 75% of patients, i.e. a very high number. Therefore, assessing this issue early is very important for the effective implementation of the care, avoiding future harm. The evaluation of HRQoL is of extreme importance for the detection of problems and symptoms that negatively interfere in the conduct of the patient's treatment, thus allowing the care to be planned including interventions that bring relief and comfort to the patient during the cancer treatment.

V. Conclusion

The data found in this study corroborate the literature, which shows that among the types of leukemia, AML is the most frequent, predominantly found in males, in the over 40 years age group. Among the treatments, chemotherapy and polychemotherapy continue to be the main therapeutic choice, even with the occurrence of various side effects, which negatively compromise the HRQoL of the patients. Regarding the HRQoL, it was found that the General Health Status (GHS/QoL) scale presented a mean of 64.7, showing that the patients believed that their health was reasonable, despite the oncological diagnosis and treatment. In the physical functions, emotional and social scales the means ranged from 61.0 to 67.3, showing an intermediate level of satisfaction. However, the role performance scale presented a low mean of 45.5, with the identification of reports of leaving the family and employment, retirement and hospitalization.

The evaluation of HRQoL is an important indicator of the health of the patient at the time of treatment. Therefore, an accurate assessment using specific instruments for cancer patients produces very important data that indicate the needs for interventions specific for each patient, providing integral, individualized and humanized care. The results of this study will contribute by demonstrating to the nursing team and other health professionals the importance of evaluating the HRQoL of patients during oncologic treatment, in order to identify their complaints and/or symptoms early, making the provision of quality and efficient care possible, overall, considering the patient as a biopsychosocial individual.

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