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Original Article

Evaluation of the quality of life of cancer patients undergoing chemotherapy*

Avaliação da qualidade de vida de pacientes oncológicos em tratamento quimioterápico

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ABSTRACT
Objective: to assess the quality of life of cancer patients undergoing chemotherapy. **Methods:** a cross-sectional study carried out in the chemotherapy sector with 51 patients able to answer the data collection instruments. For the analyses, we adopted the variance analysis and Student's t. **Results:** the health score indicated moderate quality of life and the symptoms nausea and vomiting, diarrhea, and dyspnea were the most present. The scores of the global health scale showed differences between age groups and presence of metastasis; diarrhea and financial difficulties showed differences with respect to gender; pain was more cited by those who did not undergo surgery; insomnia and nausea and vomiting were related to the time of treatment. **Conclusion:** participants had moderate overall health scores and the main functional levels affected by the treatment were social and emotional.

Descriptors: Quality of Life; Medical Oncology; Drug Therapy.

RESUMO
Objetivo: avaliar a qualidade de vida de pacientes oncológicos em tratamento quimioterápico. **Métodos:** estudo transversal realizado no setor de quimioterapia com 51 pacientes capazes de responder aos instrumentos de coleta de dados. Para as análises, adotaram-se os testes análise de variância e t de Student. **Resultados:** o escore de saúde apontou moderada qualidade de vida e os sintomas náusea e vômito, diarreia e dispneia foram os mais presentes. Os escores da escala global de saúde tiveram diferenças entre as faixas etárias e presença de metástase; a diarreia e as dificuldades financeiras apresentaram diferenças com relação ao gênero; a dor foi mais citada por aqueles que não fizeram procedimento cirúrgico; a insônia e náuseas e vômitos tiveram relação com o tempo de tratamento. **Conclusão:** participantes apresentaram escore global de saúde moderado e os principais níveis funcionais afetados pelo tratamento foram o social e o emocional.

Descritores: Qualidade de Vida; Oncologia; Tratamento Farmacológico.

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Introduction

Cancer, synonymous with a devastating disease, occurs as a result of a series of complex events that lead to a disordered growth of cells. It is considered a public health problem, not only for developed countries but also for developing ones, being the second leading cause of death in Brazil(1-4).

Worldwide, it is estimated that by the year 2020, about 19 million new cases of cancer will have been diagnosed, accounting for almost 10 million deaths(5). The number of people cured of the disease is also increasing every year, and this is due to advances in diagnosis and available treatments. The available forms of therapy are surgery, radiotherapy, and systemic treatments such as immunotherapy, hormone therapy, and chemotherapy, which can be used alone or in combination(6-7).

In metastatic diseases, the modality is chosen among the systemic therapies, because the drugs are distributed in the bloodstream, facilitating access to the sites of cancer dissemination. In chemotherapy, one of these modalities, drugs are administered at repeated and regular intervals called treatment cycles, and their scheduling is determined by the shortest time for the recovery of normal tissues. Even with such care, this therapy presents several side effects, and careful monitoring of patients during therapy is fundamental(7). Extracted from the Undergraduate Thesis

The diagnosis and the chemotherapy treatment lead to important changes in the patients' way of life, with alterations in the functional capacity, in social relationships(8), self-image, self-concept and role performance(9). The conditions imposed by the diagnosis of a malignant neoplasm cause fragility in the individual and his/her family, who need support to face the diagnosis and the whole treatment process(10).

It is known that chemotherapy treatment is responsible for changing routines and habits of life already established, and this can generate feelings of sadness, fear and anguish(11), as well as affect the quality of life in these patients. Thus, the assessment of quality of life in patients undergoing chemotherapy is essential to identify the impacts of treatment, enabling the development of strategies to improve the quality of life in this population(11-12).

Data from a quality of life assessment done with the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire "Core" 30 Items (EORTC-QLQ-C30) describe that the domains most affected after three months of chemotherapy treatment were related to the emotional function of the functional scale. The most reported symptoms were fatigue, nausea, loss of appetite, dyspnea, diarrhea, and financial worries(12).

The evaluation of cancer patients in palliative care, performed with the same instrument, pointed out that socio-demographic and clinical factors can significantly affect the quality of life in this population, especially those described in the physical and cognitive functions(8). Thus, the identification of treatment-related factors that affect the quality of life of patients undergoing chemotherapy, as well as their relationship with socio-demographic and clinical variables in a population of patients during chemotherapy treatment, can contribute to better nursing care.

The knowledge of these relationships contributes to the design of targeted and more effective protocols to reduce the aggravating factors and, as a consequence, improve the quality of life in this period of treatment(13).

Faced with the impact caused by the diagnosis and treatment of cancer for the patient and his family, the question is: how is the quality of life of cancer patients undergoing chemotherapy treatment? The present study aimed to assess the quality of life of cancer patients undergoing chemotherapy.

Methods

This is a cross-sectional study, conducted in the chemotherapy sector of a philanthropic hospital in a city in the interior of the state of São Paulo, Brazil.

Participants eligible for the research should be at least 18 years old, be under chemotherapy treatment at the time of collection, and be able to answer the data collection instruments. Patients who were unable to answer the instruments were excluded. The sample was established by convenience, and 100 patients were invited during therapy. Of these, 51 agreed to participate and were entered into the survey.

Data collection was developed from August to September 2020, and the participants were invited to participate in the chemotherapy sector itself, at the time of medication infusion. At this time, they were presented with the objectives, possible risks and benefits, and the conduct of the study. In case of acceptance, the Free and Informed Consent Term was presented for their awareness and signature, and socio-demographic and clinical data was collected. This instrument collected data regarding gender, age, education, marital status, race, smoking, pre-existing diseases, time of treatment, diagnosis, tumor site, staging, lymph node involvement, presence of metastasis, type of chemotherapy treatment, and whether surgery and/or radiotherapy was performed.

Then, the instrument to assess quality of life was given to the participant to answer and hand to the researcher. The European Organization for Research and Treatment of Cancer Quality of Life Questionnaire "Core" 30 Items (EORTC-QLQ-C30), version 3.0 in Portuguese(14), is composed of 30 questions distributed in five functional scales (physical function, cognitive, emotional, social, role performance), three symptom scales (fatigue, pain, nausea, and vomiting), a global health and quality of life scale, six items assessing symptoms (dyspnea, lack of appetite, insomnia, constipation, diarrhea, and nausea and vomiting), and a scale assessing the financial impact of the disease. Items 1 to 28 are rated on a Likert scale of 1 to 4 points, while this value is 1 to 7 points for questions 29 and 30. Then, a linear transformation of these values is performed, according to the EORTC-QLQ-C30 guidelines, generating a final score between 0 and 100 points. For interpretation of the functional and global health scales, the higher the value, the better the conditions; as for the symptoms and financial difficulty scales, the higher the value, the greater the presence of these(14).

This instrument was evaluated as to its internal consistency, generating an overall Cronbach's alpha of 0.86, a value of 0.88 for the functional scale, 0.79 for the symptom scale, and 0.88 for the global health and quality of life scale(12). Furthermore, the 30 items of the instrument had a reliability coefficient of 0.87; the global health status and quality of life scale, 0.72; the functional scale, 0.87; and the symptom scale, 0.81(8).

After collection, the data were entered into an Excel® spreadsheet, checked, and then analyzed by descriptive statistics, evaluation of the distribution of variables through histograms, Student's t-test to evaluate the relationship between quality of life and dichotomous variables, and Analysis of Variance (ANOVA) to evaluate the relationship between quality of life and variables with multiple responses, using the software IBM SPSS 22®, considering a significance level (α) of 5% for the analyses.

The research was approved by the Research Ethics Committee (Opinion No. 4,125,838/2020; Certificate of Submission for Ethical Appreciation: 32988920.7.0000.5380), the participants were ethically approached, and all ethical precepts determined by Resolution 466/12 of the National Health Council of the Ministry of Health were followed.

Results

Fifty-one participants were included, with a minimum age of 20 and a maximum age of 70 (mean 50.10; standard deviation: 13.282), predominantly female (78.4%), married (51.0%), with complete high school education (50.0%) and white (74.5%). The average time of treatment was 12.66 months (standard deviation: 21.242); there was a predominance of breast cancer diagnosis (45.1%), followed by bowel cancer (17.6%); the most frequent stage was I (60.7%) and the most used type of chemotherapy was adjuvant (45.0%). Regarding the clinical characteristics, 60.7% of patients had involvement of lymph nodes and 50.9% had metastases; most (70.5%) had surgical treatment associated and 23.5% had radiotherapy treatment associated.

The results related to quality of life collected by means of the EORTC-QLQ-C30 instrument are described in Table 1. It is important to highlight that, in the functional and global health scales, the higher the value, the better the conditions, while in the symptoms and financial difficulty scales, the higher the value, the greater their presence, and therefore, the worse the effects of therapy. The mean value of the global health scale in the study population was 67.32, representing moderate quality of life during chemotherapy treatment. In the functional scales, cognitive function had the highest scores (78.43), while emotional (55.66) and social (55.88) function had the lowest scores, indicating that they were more affected by the treatment. Regarding the symptom scales, those with the highest scores were dyspnea (79.08), diarrhea (77.12), and nausea and vomiting (70.26), while fatigue scored lowest (54.03).

Table 1 – Minimum, maximum, mean and standard deviation values of the EORTC-QLQ-C30 domains. São Carlos, SP, Brazil, 2020

EORTC- QLQ-C30	Minimum	Maximum	Average	Standard deviation
Global Health Scale	8.33	100.00	67.32	21.656
Physical function	0.00	100.00	67.58	28.095
Cognitive function	16.67	100.00	78.43	26.096
Emotional function	0.00	100.00	55.66	31.918
Social function	0.00	100.00	55.88	38.560
Role Performance	0.00	100.00	60.78	34.451
Financial difficulties	0.00	100.00	60.78	40.390
Fatigue	0.00	100.00	54.03	34.067
Pain	0.00	100.00	64.70	35.846
Nausea and vomiting	0.00	100.00	70.26	33.881
Dyspnea	0.00	100.00	79.08	30.521
Loss of appetite	0.00	100.00	68.62	34.535
Insomnia	0.00	100.00	61.43	39.085
Constipation	0.00	100.00	66.01	37.410
Diarrhea	0.00	100.00	77.12	32.991

*EORTC-QLQ-C30: *European Organization for Research and Treatment of Cancer Quality of Life Questionnaire "Core" 30 Items*

Socio-demographic and clinical variables were compared for each domain of the EORTC-QLQ-C30 instrument using Student's t test and ANOVA. The values with significant relationship are described in Table 2 and 3. No mean differences were observed for the variables race, marital status, education, smoking, BMI, cancer site, lymph node involvement, radiation therapy, and type of chemotherapy.

Table 2 – Comparison of socio-demographic data and clinical variables with the domains of the EORTC-QLQ-C30 instrument. São Carlos, SP, Brazil, 2020

Variables	Global Health Scale	p	Financial Dificulty	p	Role Performance	p	Physical function	p
Age (years)								
≥50	60.33	0,022*	61.33	0,925*	53.33	0,131*	60.53	0,079*
<50	74.03		60.25		67.94		74.35	
Metastasis								
Yes	61.21	0.049*	65.38	0.451*	53.84	0.158*	60.51	0.076*
No	73.55		56.52		68.11		74.49	
Staging								
I	67.95		63.44		61.29		67.95	
II	66.66	0.045†	56.25	0.533†	62.50	0.057†	71.25	0.030†
III	8.33		66.66		0.00		20.00	
IV	50.00		0.00		0.00		0.00	
Sex								
Female	66.87	0.783*	55.00	0.018*	57.91	0.184*	64.00	0.057*
Male	68.93		81.81		71.21		80.60	
Pre-existing diseases								
Yes	72.36	0.124*	66.66	0.335*	71.92	0.040*	70.17	0.582*
No	62.20		54.76		51.19		65.47	

*Student t-test; †ANOVA; EORTC-QLQ-C30: *European Organization for Research and Treatment of Cancer Quality of Life Questionnaire "Core" 30 Items*

The scores of the global health scale showed differences in the age groups (p=0.022), and the older the patient the lower the global health and quality of life. Furthermore, this scale was related to metastasis, with better levels of global health related to the absence of metastasis (p=0.049). Regarding the tumor staging, there was a difference in the values of the global health scale (p=0.045) with the most severe staging

(III and IV), which presented the worst global health level. Similarly, physical function also showed a difference when compared with staging, with lower scores present in more advanced stages of the disease. There was a difference in the scores of the financial difficulty scale when compared with gender (p=0.018). When participants reported pre-existing diseases, role performance was more impaired (p=0.040).

Table 3 – Comparison of socio-demographic data and clinical variables with the EORTC-QLQ-C30 symptom scales. São Carlos, SP, Brazil, 2020

Variables	Nausea and vomiting	p*	Insomnia	p	Diarrhea	p	Loss of appetite	p	Pain	p
Metastasis										
Yes	66.02	0.471	66.66	0.308	67.94	0.065	64.10	0.423	58.33	0.311
No	73.18		55.07		85.50		72.46		68.84	
Sex										
Female	71.25	0.695	58.33	0.284	73.33	0.049	68.33	0.912	62.50	0.407
Male	66.67		72.72		90.90		69.69		72.72	
Surgery										
Yes	72.22	0.527	59.25	0.491	78.70	0.601	67.59	0.751	58.33	0.020
No	65.55		66.66		73.33		71.11		80.00	
Treatment time (months)										
≥24	88.09	0.016	90.47	0.001	80.95	0.655	80.95	0.287	71.42	0.566
<24	68.13		54.90		74.50		64.68		62.74	

*Student t-test; EORTC-QLQ-C30: *European Organization for Research and Treatment of Cancer Quality of Life Questionnaire "Core" 30 Items*

In the symptom scale, there were differences in the report of diarrhea between genders, with higher values for men (p=0.049). There was a difference in pain scores when comparing the group that had undergone previous surgery and those who had not, with higher values reported by those who had not undergone surgery (p=0.020). Also, the symptoms of insomnia (p=0.001) and nausea and vomiting (p=0.016) showed differences according to treatment time; both had higher scores with treatment time greater than 24 months.

Discussion

The sample size, as well as the type of sampling and the type of study can be listed as limitations of the study. Because this was a cross-sectional study, cause and effect relationships could not be established; furthermore, variables such as level of dependence could have been collected to evaluate the relationship with the quality of life scale.

Chemotherapy treatment impacts the daily life of people, and quality of life is the object of greater attention in the rehabilitation of these patients. Thus, this research can contribute to the planning of actions aimed at restoring the quality of life of cancer patients undergoing antineoplastic chemotherapy treatment. Also, by establishing relationships between quality of life and the socio-demographic and clinical variables, the nurse who works in the chemotherapy area can direct his intervention to specific areas, develop methods to support the family and patient with interventions for a qualified assistance, reducing the physical and emotional burden.

In Brazil, the estimated incidence according to the primary location of tumors in both sexes shows that breast cancer is the most prevalent among women (29.7%), and prostate cancer the one that most affects men (29.2%)(4). The data regarding the pathology in women are in accordance with what was found in this study; however, the occurrence in men proved to be different.

An evaluation of 79 cancer patients undergoing chemotherapy indicated that bowel (28%), breast and gynecological (28%) tumors were the most prevalent, followed by head and neck (15%)(12). In 208 cancer patients, the most common cancers were colon and rectum (18.3%), followed by breast (10.1%), cervix (6.3%), and lung (6.3%)(11).

The quality of life of cancer patients in palliative care, evaluated in a national study obtained an overall mean health score of 60.32(15). This value is similar to the one found; however, the literature shows average global health values of 54.04(13), which represents a lower quality of life. When comparing the scale values obtained before and three months after the beginning of treatment, no significant differences were found in the mean values(12).

The physical and cognitive function domains represented a moderately healthy functional level in the studied population, while in the social and emotional domains the values represent a lower functional level. Data found in patients on palliative chemotherapy indicated a reduction in functional capacity and, with this, an impact on the activities of daily living, social relationships, and financial situation(8). A significant impairment of the emotional scale (mean 37.30) was described and, despite presenting a higher mean, physical function can also be compromised by chemotherapy treatment (mean: 59.79)(15). In contrast, a comparative analysis at the beginning and after three months of treatment showed improvement in physical and cognitive function; the emotional scale, however, showed worsening(12).

Results for cognitive function are described with the highest average on the scale (69.17); on the other hand social function (47.17) and role performance (42.25) showed lower average values, indicating that they were more impaired(13). These results are similar to the one found in this study, in which the value of cognitive function (78.43) was higher and the values of social (55.88), emotional (55.66) and role performance (60.78) functions were more compromised.

In the evaluation with the symptom scales, there was a low rate of fatigue. On the other hand, insomnia, pain, and constipation showed moderate values and nausea and vomiting, diarrhea, and dyspnea symptoms had higher scores, which represents a higher presence of these symptoms, interfering in the quality of life of this population. One study also verified worse values in this scale when compared to the initial values and after three months of chemotherapy, being the symptoms of fatigue, nausea, dyspnea, loss of appetite, and diarrhea those with significant worsening(12).

A relationship between overall health and time of diagnosis can be found in the literature, showing that the time of living with the diagnosis can impair quality of life(15). Yet, another study describes that the global health scale showed association with the level of dependence, inferring that the high level of dependence reduces the perception of global health quality(13).

Considering the relationship of the symptom scale, the literature relates dyspnea to the time of diagnosis, the presence of fatigue to physical function, and the presence of metastasis to increased dyspnea(15). Furthermore, a significant association of the symptom scale with age group and level of dependence can be found(13), and difference in the report of nausea symptom with the evolution of chemotherapy treatment time(12).

This study pointed out a relationship between the presence of pain and the performance of surgery, and patients who did not undergo surgery prior to chemotherapy treatment described more pain symptoms. A study on quality of life in women with breast cancer on adjuvant chemotherapy described that patients who had mastectomy surgery reported a slight decline in all quality of life scores. This effect of surgery was related to age, with women aged at the extremes having worse scores, especially with mastectomy(16).

The diagnosis of cancer represents an impact on the quality of life of patients, whether related to the disease process itself or its treatment. Added to this, negative emotions experienced and somatic illnesses can reduce the quality of life of these patients. The factors that are significantly related to the occurrence of symptoms during treatment vary according to the stage of the disease and the chemotherapy regimen adopted. For this reason, regular assessment of the quality of life of these patients is important to provide the best possible assistance throughout treatment, evaluating and intervening early(17).

Conclusion

It is concluded that the evaluated patients have moderate overall health score and lower functional levels in the social and emotional domains. Regarding symptoms, those with the highest incidence were nausea and vomiting, diarrhea, and dyspnea, thus being those with the greatest impact on quality of life. Diarrhea had a higher mean score in the male population, as well as financial difficulties. Pain was the symptom, with higher mean values in those who did not undergo surgery and insomnia was related to a treatment time longer than 24 months. The age range and the presence of metastasis were related to the global health evaluation.

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Authors' Contribution

Conception and design, analysis and interpretation of the data: Carlos EA, Borgato JA, Garbuio DC.
Writing of the article, relevant critical review of the intellectual content: Carlos EA, Borgato JA, Garbuio DC.
Final approval of the version to be published: Carlos EA, Borgato JA, Garbuio DC.

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