Sociodemographic and Nutritional Profile of Oncological Patients in Enteral Nutritional Therapy

Perfil Sociodemográfico e Nutricional de Pacientes Oncológicos em Terapia Nutricional Enteral

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Abstract

Introduction: Cancer patients are at high nutritional risk, with malnutrition and cachexia being commonly observed in these individuals. Enteral nutritional therapy (ENT) is a therapy that can offer numerous benefits for these. **Objective:** To identify the sociodemographic and nutritional profile of cancer patients, relating to the effects of ENT with nutritional status and clinical evolution of these patients. **Method:** Retrospective clinical study with review of electronic medical records of patients admitted from September 2016 to April 2017 at a public and private oncology hospital in the city of Juiz de Fora - MG. Statistical analyzes were by means of frequencies and proportions and means and standard deviations depending on the variables, being p <0.05. **Results:** Among 96 charts analyzed, 68.75% were males, 54.16% were elderly, 52.1% were former smokers, 39.6% were ex- and 46.9% had head and neck cancer. Of these, 44.8% were suspected of malnutrition and 39.6% were malnourished. The mean BMI was 19.44 ± 4.83 kg / m² and the weight was 52.91 ± 12.97 kg before the ENT and 18.76 ± 4.47 kg / m² and 51.01 ± 12.69 kg after seven days in ENT, showing no significant difference between the values obtained before and after ENT. The classification of the percentage of weight loss at the beginning of ENT showed 88.5% with severe weight loss and after seven days of therapy there was a reduction in this percentage to 46.9%. **Conclusions:** Most cancer patients present with progressive impairment of nutritional status. ENT was a therapy that contributed positively to the delay of weight loss in these patients.
Key words: Neoplasms; Protein-Calorie Malnutrition; Enteral Nutrition.

Resumo

Introdução: Os pacientes oncológicos apresentam alto risco nutricional, sendo a desnutrição e a caquexia comumente observadas nesses indivíduos. A terapia nutricional enteral (TNE) é uma terapêutica que pode oferecer inúmeros benefícios. **Objetivo:** Identificar o perfil sociodemográfico e nutricional de pacientes oncológicos relacionando-os aos efeitos da TNE com estado nutricional e à evolução clínica desses pacientes. **Método:** Estudo clínico retrospectivo com revisão de prontuários eletrônicos de pacientes admitidos, no período de setembro de 2016 a abril de 2017, em um hospital oncológico público e privado, no município de Juiz de Fora - MG. As análises estatísticas foram por meio de frequências e proporções e média e desvio-padrão a depender das variáveis, sendo p<0,05. **Resultados:** Entre os 96 prontuários analisados, 68,75% eram do gênero masculino, 54,16% idosos, 52,1% ex-tabagistas, 39,6% ex-etilistas e 46,9% apresentavam câncer de cabeça e pescoço. Destes, 44,8% apresentavam suspeita de desnutrição e 39,6% estavam desnutridos. A média do índice de massa corporal (IMC) foi de 19,44±4,83 kg/m² e o peso 52,91±12,97 kg antes da TNE, e 18,76±4,47 kg/m² e 51,01±12,69 kg após sete dias em TNE, não apresentando diferença significativa entre os valores obtidos antes e após a TNE. A classificação do percentual da perda de peso no início da TNE evidenciou 88,5% com perda de peso grave e, após sete dias de terapia, houve uma redução nesse percentual para 46,9%. **Conclusões:** A maioria dos pacientes oncológicos apresenta um comprometimento progressivo do estado nutricional. A TNE contribuiu de modo positivo para o retardo da perda de peso desses pacientes.
Palavras-chave: Neoplasias; Desnutrição Proteico-Calórica; Nutrição Enteral.

Resumen

Introducción: Los pacientes oncológicos presentan alto riesgo nutricional, siendo la desnutrición y la caquexia comúnmente observadas en esos individuos. La terapia nutricional enteral (TNE) es una terapéutica que puede ofrecer innumerables beneficios para estos. **Objetivo:** Identificar el perfil sociodemográfico y nutricional de pacientes oncológicos relacionando a los efectos de la TNE con estado nutricional y evolución clínica de esos pacientes. **Método:** Estudio clínico retrospectivo con revisión de prontuarios electrónicos de pacientes admitidos en el período de septiembre de 2016 a abril de 2017 en un hospital oncológico público y privado en el municipio de Juiz de Fora - MG. Los análisis estadísticos fueron a través de frecuencias y proporciones y medias y desviaciones estándar a depender de las variables, siendo p <0,05. **Resultados:** Entre 96 prontuarios analizados, el 68,75% eran del género masculino, 54,16% ancianos, 52,1% ex tabaquistas, el 39,6% etilistas y el 46,9% tenían cáncer de cabeza y cuello. De estos 44,8% presentaban sospechosos de desnutrición y 39,6% desnutridos. El promedio de IMC fue de 19,44 ± 4,83 kg / m² y el peso 52,91 ± 12,97 kilogramos antes de la TNE y 18,76 ± 4,47 kg / m² y 51,01 ± 12,69 kilogramos después de siete días en TNE, no presentando diferencia significativa entre los valores obtenidos antes y después de la TNE. La clasificación del porcentaje de la pérdida de peso al inicio de la TNE evidenció un 88,5% con pérdida de peso grave y después de siete días de terapia hubo una reducción en este porcentual para el 46,9%. **Conclusiones:** La mayoría de los pacientes oncológicos presentan un compromiso progresivo del estado nutricional. La TNE fue una terapia que contribuyó positivamente al retraso de la pérdida de peso de estos pacientes.
Palabras clave: Neoplasias; Desnutrición Proteico-Calórica; Nutrición Enteral.

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INTRODUCTION

Cancer is a chronic multifactorial disease characterized by disordered growth of cells, which undergo rapid division and behave aggressively and uncontrollably, leading to the formation of malignant tumors. These can invade distant or adjacent tissues and organs in the process known as metastasis[1].

Cancer is a major public health problem and a leading cause of mortality worldwide, particularly in developing countries. Approximately 80% to 90% of cancer cases are related to environmental factors such as eating habits, medicines, alcohol consumption, tobacco use, solar exposure, physical inactivity, chemical agents, viral infections, and aging itself. Cancer is also indirectly associated with low schooling and socioeconomic inequalities[2].

According to the Brazilian National Cancer Institute José Alencar Gomes da Silva (INCA), cancer patients are at high nutritional risk because they do not eat enough to meet their energy needs, due to a series of factors including the underlying disease, pain, nausea, vomiting, anxiety, inappetence, dysphagia, depression, functional incapacity, aggressive treatments, and even the hospital environment. Protein-energy malnutrition and cachexia are thus common in these patients. Anorexia is frequently seen in cancer patients, potentially leading to malnutrition and evolving to cachexia[3].

Given this scenario, enteral nutritional therapy (ENT) offers benefits and contributes to the recovery and/or maintenance of nutritional status. Adequate and early ENT is an important factor for promoting health, decreasing physiological stress, and maintaining immunity in these patients[4].

In this context, the current study aimed to identify the sociodemographic and nutritional profile in a sample of cancer patients and relate the effects of ENT to the patients' nutritional status and clinical evolution.

METHOD

This was a retrospective observational study in a public/private cancer hospital in Juiz de Fora, Minas Gerais State, Brazil. The study was approved by the Institutional Review Board of Universidade Presidente Antônio Carlos, case review no. 2.288.197.

Data were collected from 96 electronic charts with the protocols for nutritional care of patients admitted from September 2016 to April 2017. Inclusion criteria were patients of both sexes, age > 18 years, and time in ENT ≥ 7 days. Exclusion criteria were patients with fluid retention or edema associated with corticoid use due to

its interference in weight status and consequently its influence on classification of nutritional status.

Data collection included name, sex, age, date of admission, schooling, profession or occupation, type of health coverage (public versus private), current or former smoking, current or former alcohol consumption, diagnosis or diagnostic hypothesis, cancer treatment, comorbidities, height (m), current weight (kg), usual weight (kg), body mass index (BMI) (kg/m²), assessment and classification of nutritional risk according to patient-generated subjective global assessment (PG-SGA), percentage of weight loss, and classification and presence or absence of cachexia as reported on the patient chart according to the classification used by the hospital, based on the International Cachexia Consensus and the Brazilian Consensus on Cachexia and Anorexia in Palliative Care, both from 2011. BMI classification was based on the cutoff points recommended by the World Health Organization (WHO) for the adult and elderly populations.

The anthropometric assessments performed by the Department of Nutrition used the data from the patient's admission records and seven days after the team's intervention with ENT.

Statistical analysis used the SPSS package, version 17. Analysis of the categorical variables (sex, public versus private health coverage, schooling, profession or occupation, current or former smoking, current or former alcohol consumption, cancer treatment, comorbidities, PG-SGA, presence or absence of cachexia, BMI classification, classification of percentage of weight loss) were described as frequencies and proportions. Quantitative variables (age, height, BMI, and current weight at baseline and seven days after ENT) were described as means with standard deviations. Significance of differences between the means before and after treatment was verified with the matched-pairs t-test. Significance of the differences in the qualitative variables was verified with the Mantel-Haenszel chi-square test. Statistical significance for all the tests was set at p<0.05.

RESULTS

The study analyzed 96 electronic patient charts, as follows: 68.7% males (n=66); 54.2% with age ≥ 60 years (n=52), and mean age 62.17±10.64 years (range 40-84). Public coverage under the Unified National Health System (SUS) accounted for 89.6% (n=86) of the hospitalizations.

As for educational level, most of the patients had complete primary schooling, totaling 60.4% (n=58). The most common occupation was retiree/pensioner with 34.5% (n=33), followed by farming with 10.4%

(n=10), housekeeping with 10.4% (n=10), shopkeeping with 9.4% (n=9), and others, 35.4% (n=34). In relation to smoking and alcohol consumption, 52.1% (n=50) were former smokers, 5.2% (n=5) were current smokers; 39.6% (n=38) reported former alcohol consumption, and 5.2% (n=5) reported current alcohol consumption. The most prevalent clinical diagnosis was head and neck tumor (46.9%).

Comparing smoking and alcohol consumption to type of cancer, 68% of patients (n=34) that were former smokers showed a diagnosis of head and neck tumor. Likewise, 71.1% of patients (n=27) with a history of alcohol consumption had head and neck tumors. Comparing gender to type of cancer, 54.5% (n=36) of male patients had head and neck tumors, compared to only 30% (n=9) of female patients.

As for cancer treatment, 87.5% (n=84) were undergoing antineoplastic therapy. The most frequent modality was chemotherapy with 35.4% (n=34), followed by radiotherapy with 29.2% (n=28). Comorbidities associated with the cancer were found in 70.8% (n=68) of the patients. The most prevalent comorbidity was arterial hypertension (AH) in 42.7% (n=41) and AH plus diabetes mellitus in 18.8% (n= 18).

According to classification of nutritional risk based on PG-SGA, 44.8% of the patients presented suspicion of malnutrition and 39.6% were malnourished, including moderate to severe malnutrition, as shown in Table 2 (p<0.05), with the percentage of malnutrition in relation to the other classifications. In relation to presence or absence of cachexia, 60.4% of the patients (n=58) did not present cachexia; however, there was a relevant proportion of patients with evidence of extreme malnutrition (39.6%; n=38).

Correlating presence or absence of cachexia to type of cancer, among the patients with extreme malnutrition, the majority had head and neck tumors (57.9%) compared to other types of neoplasms, a difference that was statistically significant (p<0.05).

Mean BMI before ENT was 19.44 ±4.83 Kg/m², compared to 18.76 ±4.47 kg/m² after seven days of therapy, a difference that was not statistically significant (p>0.05). BMI classification (Table 1) showed 66.6% (n=64) with malnutrition at the baseline assessment and 69.7% (n=67) after seven days of ENT.

Concerning weight before and after seven days of ENT, the results showed a mean of 52.91 ±12.97 Kg before ENT, with a minimum weight of 20.21 Kg and maximum of 93.7 Kg, and a decrease to 51.01±12.69 Kg after seven days of ENT, with a minimum weight of 20.21 Kg and maximum of 86.6 Kg. This weight decrease was not statistically significant (p>0.05) when compared to baseline weight (before ENT). Classification of the

Table 1. Classification of nutritional status according to body mass index before and after 7 days of enteral nutritional therapyal

Classification	Before ENT N (%)	After 7 days of ENT N (%)
Normal weight	25 (26,0)	25 (26,0)
Malnutrition grade I	39 (40,6)	41 (42,7)
Malnutrition grade II	8 (8,3)	7 (7,3)
Malnutrition grade III	17 (17,3)	19 (19,8)
Obesity grade I	7 (7,3)	4 (4,2)
Total	96 (100,0)	96 (100,0)

percentage of weight loss at the start of ENT showed that 95 patients (98.9%) presented weight loss, and after seven days of therapy, 46 patients (47.9%) did not show weight loss (Table 2). Of the patients that did not show weight loss, 26 (27.1%) gained weight, 20 (20.8%) maintained their weight, and 50 (52.1%) continued to lose weight after ENT.

Table 2. Classification of percentage of weight loss in patients analyzed before and after 7 days of enteral nutritional therapy

Classification	Before ENT N (%)	After 7 days of ENT N (%)
Severe loss	85 (88.5)	45 (46.9)
No loss	1 (1.0)	46 (47.9)
Significant loss	10 (10.4)	5 (5.2)
Total	96 (100.0)	96 (100.0)

DISCUSSION

The data collected from the electronic patient charts showed a predominance of: male patients, elderly, with complete primary schooling, and retired. As for type of health coverage, the public Unified National Health System (SUS) accounted for 89.6% of the hospitalizations. Relevant to this finding, according to a study of cancer patients by Kolankiewicz et al.[5], chronic degenerative diseases have a worse prognosis when they are associated with low schooling and socioeconomic inequalities.

The high proportion of male patients in our sample corroborates a study by Vieira et al.[6] in a charitable hospital in the city of Cuiabá, Mato Grosso State, Brazil, where 79.2% of the cancer patients were males.

Cancer incidence in men can be explained by the predominant male culture, in which self-care and reliance on health services are viewed as feminine attributes and

thus purportedly place their masculinity at risk. Men are also disproportionally exposed to several risk factors for cancer incidence and mortality, such as smoking, alcohol consumption, physical inactivity, unbalanced diet, and obesity.[7]

Mean age in the current study (62.17±10.64 years) was similar to that reported by Boaventura et al.[8], who studied the profile of cancer patients in a public hospital in São Paulo State, where the mean age was 62 years. Aging itself is a risk factor for the development of some types of neoplasms. The increase in cancer incidence in the elderly is due to prolonged exposure to carcinogens, accumulation of genetic alterations, and immune dysfunctions, which can explain the higher prevalence of individuals with cancer in this age bracket, requiring targeted strategies for prevention and control of the disease[9].

As for tobacco and alcohol consumption, the current study's data corroborate those of Campion et al.[10], who analyzed cancer patients' charts from two referral centers in stomatology in Alagoas State, Brazil, where 91.7% had been exposed to tobacco and 77% to alcohol.

Smoking and alcohol consumption can be considered the principal risk factors for the development of cancer, especially primary head and neck tumors (except for thyroid tumors). Cigarettes contain substances that can alter individuals' molecular profile and cause mutations, while alcohol acts as a solvent, increasing the mucosa's exposure to carcinogenic agents and facilitating and increasing their absorption at the cellular level[11].

Head and neck tumors were the most prevalent types in the current study (46.9%), corroborating findings by Brito et al.[12] in southwestern Bahia State, Brazil, in a study of adults and elderly seen at a support institution for cancer patients, where 40.5% had this same tumor site.

Head and neck tumors are characterized by local aggressiveness and risk of developing secondary tumors, thus presenting high mortality and morbidity, with smoking and alcohol consumption as the leading risk factors[13]. The current study found a predominance of head and neck tumors in male individuals who were smokers and former alcohol consumers. The data thus corroborate the incidence of this disease.

The most frequent type of antineoplastic treatment in this study was chemotherapy, followed by radiotherapy. However, Medeiras et al.[14], in a study of outpatients undergoing cancer treatment in the city of São José do Rio Preto, São Paulo State, found radiotherapy in combination with chemotherapy as the most prevalent treatment modality. This can be explained by the fact that in the hospital where the current study was performed, radiotherapy is part of private treatment, while most of the patients were covered by the public health system (SUS).

In the current study, 70.8% of patients presented some comorbidity, with arterial hypertension as the most prevalent. This is consistent with a study by Azevedo and Bosco[15], who reported comorbidities in 55.0% of their patient sample, with arterial hypertension as the most prevalent (25%).

Hypertension has been reported as the most frequent comorbidity in patients with malignant neoplasms. The association of the latter with the use of certain therapeutic agents, especially angiogenesis inhibitors, can lead to or aggravate hypertension, which in turn can minimize the benefits of antineoplastic treatment and reduce patient survival, in addition to being associated with increased consumption of medications that can negatively impact appetite and the absorption, metabolism, and excretion of nutrients[16].

As for classification of nutritional risk via PG-SGA, in the current study, malnutrition was found in 39.6% of the sample, and 44.8% presented suspicion of malnutrition. This result is consistent with other studies using the same method. Pastore et al.[17], in a study of 77 patients with gastrointestinal and lung cancer, found malnutrition in 87.0% of their sample.

According to an observational epidemiological study with 1,545 randomly selected adult patients in cancer centers in France, 30.9% were malnourished (18.6% moderately malnourished and 12.2% severely malnourished). Relating prevalence of malnutrition to tumor site and length of hospital stay, the authors found that head and neck cancer and length of stay increased the risk of malnutrition[18].

Cunha et al.[19] compared the reason for hospitalization to occurrence of malnutrition in patients in the University Hospital in Ribeirão Preto, São Paulo State, and found that individuals with neoplasms showed higher prevalence of malnutrition (62.7%), of whom 49.5% were moderately malnourished and 12.7% severely malnourished, when compared to those hospitalized for other diseases. Severe malnutrition occurred mainly in patients with head and neck tumors (46.9%).

The differences in the percentages can be explained by the studies' patient characteristics, such as age bracket, time since diagnosis, type of neoplasm, and antineoplastic treatment. However, PG-SGA is an important method for assessing nutritional risk, since it is capable of predicting complications, mortality, and length of hospital stay. In this context, early and continuous nutritional therapy is of the utmost importance in the attempt to reverse or improve the patient's nutritional status[20].

Tumoral cachexia is the maximum manifestation of malnutrition in cancer patients, directly accounting for one-third of deaths. Its most striking characteristics

include loss of muscle mass (with or without loss of adipose tissue) that cannot be completely reversed with conventional nutritional therapy, thus compromising the body's functional capacity. Patients with malignant neoplasms display elevated inflammatory markers, and this systemic inflammatory reaction is related to anorexia, malnutrition, and cachexia, facilitating tumor progression and consequently increasing morbidity and mortality[21].

According to INCA[3], anorexia-cachexia syndrome is frequent in cancer patients, with approximately 66.4% of patients presenting weight loss greater than 10%. Meanwhile, in the current study, absence of cachexia was found in 60.64% of the sample, while 39.6% presented extreme malnutrition; the latter percentage is relevant, since cachexia has a complex and multifactorial etiology in which progressive weight loss and reduced BMI are just one of the components.

In the current study, 98.8% of patients presented weight loss at the start of ENT; of these, 88.5% presented severe loss, and according to BMI classification, 66.6% were malnourished, with a mean BMI before ENT of 19.44±4.83 Kg/m². Thus, the possible lack of consideration of such clinical aspects as anorexia and increased systemic inflammation may have interfered in the identification of presence or absence of cachexia.

Nutritional therapy is extremely important as adjuvant treatment for cancer patients. For such therapy to be effective, enteral nutrition should be initiated early, administered 24 to 48 hours after the patient's admission. Energy needs should be met between the third and seventh day of ENT, contributing to the recovery of the patient's nutritional status, increasing the response to antineoplastic treatment, and decreasing the adverse effects of such treatment[22].

Considering anthropometric parameters, after seven days of ENT, mean BMI was 18.76±4.47 kg/m², and 69.7% of the patients were malnourished according to BMI classification. As for percentage of weight loss, 52.1% of the patients continued losing weight (46.9% severe loss). However, 47.9% did not present weight loss after seven days of ENT (27.1% showed weight gain and 20.8% maintained their weight).

Comparing these results to the data at the start of ENT, there was a reduction of 47.9% (n=46) in the proportion of patients with weight loss, evidencing weight gain or maintenance. Studies have shown that ENT delays or prevents weight loss in cancer patients.[2] Corroborating these studies, Gevaerd et al.[23] found weight gain in 45.2% of their cancer patients, and Gavazzi et al.[24] observed weight maintenance in 48.7%. The authors report that patients receiving ENT showed higher odds of concluding their antineoplastic treatment.

However, ENT can be compromised, hindering an adequate protein-energy supply due to issues with routine hospital procedures, routine patient activities, removal and reintroduction of feeding tubes, and gastrointestinal intolerance[25]. In the current study, these factors may help explain the fact that after seven days of ENT, 52.1% (n=50) of patients continued to lose weight.

CONCLUSION

In light of the results, we conclude that in this hospital, the majority of the patients are admitted with coverage by the public Unified National Health System (SUS) and are males, elderly, with low schooling, and have some history of smoking and alcohol consumption. As for tumor site, the largest proportion was head and neck tumors in malnourished patients or those at risk of malnutrition due to complications of the underlying disease and the antineoplastic treatment modality.

ENT contributed positively to delaying weight loss in these patients with severely compromised nutritional status, thus favoring the response to antineoplastic treatment and possibly decreasing their length of stay.

The results suggest the need for early nutritional intervention, since these patients have progressively compromised nutritional status. Since ENT is capable of reversing malnutrition in cancer patients, greater awareness-raising concerning its use and benefits is extremely important and can greatly improve patient prognosis.

CONTRIBUTIONS

Michelle Martins Bortoletto and Iury Antônio de Souza participated in the study's conception, data acquisition, analysis, and interpretation, and writing of the manuscript. Anna Marcella Neves Dias participated in the study design, analysis, and critical revision with a social contribution. Nilva Maria de Almeida participated in the study design, data acquisition and analysis, and critical revision with a social contribution. Elisa Grossi Mendonça participated in the study's conception, data interpretation, critical revision with a social contribution, and approval of the final version.

CONFLICT OF INTEREST

None.

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