# Nutritional profile of patients with cancer of the digestive tract hospitalized to a university hospital in Pará state

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*Abstract — Patients with cancer ot the digestive tract show changes in their nutritional status, leading them to various degrees of malnutrition. The assessment of nutritional status is essential to identify malnutrition and risks to it. Objective: To characterize the clinical, anthropometric and dietary profile of patients with digestive cancer admitted to a University Hospital in Belém, PA. Method: Descriptive, cross-sectional and prospective study, carried out at the João de Barros Barreto University Hospital, from July 2018 to March 2020. Sample composed of 59 cancer patients of both sexes, diagnosed with digestive tract neoplasia. Results: Among the variables studied, there was a prevalence of males in 50.8%. Among the women, 96.6% were classified as former smokers and 76.3%, former alcoholic. The main gastrointestinal symptoms presented were: constipation 36%, vomiting 22.3%, diarrhea and abdominal pain both 18.6%. In swallowing disorders: odynophagia and dysphagia manifested in 28.8% and 27.1%, respectively. The most common neurological symptoms were: headache 20.3% and motor weakness 17%. The most frequent type of cancer was stomach 57.6%, followed by intestine 16.9%. As for IMC, most adults were classified as eutrophic 61.8%, among the elderly 60% were malnourished, of these 56% had loss of muscle mass based on calf circumference. When analyzing eating habits, a high consumption of foods considered carcinogenic was identified. Conclusion: Malnutrition was prevalent, especially in the elderly. The presence of symptoms and food inappetence were associated with anticancer treatment. And high consumption of neoplasm-promoting foods to the detriment of protective foods.*

## I. INTRODUCTION

The concept of cancer corresponds to the disordered growth of cells, which affect tissues and organs[1]. The onset process is called oncogenesis or carcinogenesis, of which the initiation, promotion, progression and inhibition of the tumor are responsible for the cumulative effects of different carcinogens or carcinogens[2].

The etiology of cancer is multifactorial and includes genetic and environmental factors. Such factors can be divided into modifiable and non-modifiable, among the modifiable ones we can mention: smoking, inadequate diet, physical inactivity, obesity, etc. While the non-modifiable factors are age, ethnicity or race, heredity and gender[3]. In this context, dietary factors and physical inactivity can contribute to approximately 1/3 of all types of cancer.

According to data from the World Health Organization[4] from 2018, the incidence of the disease rose to 18,1 million cases. In Brazil, according to the National Cancer Institute[5] for the year 2018, the estimate was 634.880,000 new cases of cancer. Regarding digestive tract neoplasms, around 50.360 cases were estimated, of which colon and rectum would have 17.380; stomach, 13.540; oral cavity, 11.200 and esophagus, 8.240 among men. Among females, there were 267.30 cases, of which 18.980 were from the colon and rectum and 7.750 from the stomach [6].

The Mortality Information System (SIM) revealed in 2017 that the cancers that most resulted in death in men were: colon and rectum, stomach, esophagus, liver and biliary tract, pancreas and oral cavity, respectively. In women, colon and rectum, stomach, liver and biliary tract were the most common[7].

Cancer patients present changes in their nutritional status with specific changes in body composition. These can be estimated based on nutritional history as well as on biochemical and clinical examinations, through dietary anamnesis, anthropometric measurements and subjective global nutritional assessment (SGA) [8].

These patients are already at nutritional risk, and malnutrition arises through it a series of clinical consequences described above, including deterioration in quality of life, reduced response to treatment, increased risk of chemotherapy-induced toxicity and decreased cancer survival[9].

Usually, these patients have dysfunction in nutrient intake due to changes in gastrointestinal functions, which, in turn, are consequences of the use of anticancer drugs. The most common symptoms when the GIT is affected are: vomiting, nausea, diarrhea, constipation, dysphagia, odynophagia, dysgeusia, dysosmia and xerostomia[10].

In this sense, this work aims to characterize the nutritional profile of patients with digestive tract cancer admitted to a University Hospital in Belém-PA.

## II. METHOD

This is a descriptive, cross-sectional and prospective study with analytical characteristics. Carried out at the João de Barros Barreto University Hospital (HUJBB)/Federal University of Pará (UFPA), in the city of Belém-PA, after approval by the Research Ethics Committee of the Institute of Health Sciences, under protocol nº 950.479.

This study included 59 adult and elderly patients, over 18 years of both sexes, with confirmed diagnosis of digestive tract neoplasm and adnexal glands, admitted to HUJBB clinics from July 2018 to March 2020, oriented, aware , ambulant or not and who agreed to participate in the study by signing the Informed Consent Form (FICF) and excluded patients with cancer in other locations, disoriented in time and space, without a confirmed diagnosis of the object of study.

Sociodemographic profile: A specific form containing questions about sex, age and history of smoking and alcohol consumption was applied.

Clinical semiology: Data were collected in a specific form with questions regarding the location of the neoplasm; gastrointestinal changes (diarrhea, pain, constipation, vomiting) and bowel function; restriction of oral food intake, such as changes in chewing, odynophagia and dysphagia and neurological changes (headache, mental confusion, motor weakness, leg pain, neck stiffness, drowsiness, seizure, motor paralysis).

Nutritional assessment: The anthropometric measurements used were weight and height to characterize the Body Mass Index (BMI), Brachial Circumference (BC), Calf Circumference (CC), percentage of recent weight loss (%WL). For measurements following the criteria proposed by Lohman et al., 1988, an inelastic measuring tape, a G-Tech BALGL 10 digital scale and a Sanny clinical adipometer were used. The BMI was classified according to the parameters of the World Health Organization (WHO, 2000) for adults and for the elderly, the classification of LIPSCHITZ, 1994 was used. The BC was analyzed according to the normality pattern of Frisancho (1981) and the results classified through the values references adapted from Blackburn & Thornton (1979). The CC was analyzed according to the WHO (1995), with a value less

than 31 cm indicative of loss of muscle mass. For weight loss percentage, patients were classified according to reference values established by Blackburn and Thornton (1979).

Food consumption: Eating habits were identified through the adapted food frequency questionnaire (FFQ). The foods were analyzed based on the 2014 Food Guide for the Brazilian Population.

## III.    STATISTICAL ANALYSIS

The collected data were organized in the Microsoft Excel 2010 program. The tables were built using Microsoft Word software. Qualitative variables were described by frequency and percentage.

## IV.    RESULTS

The sample consisted of 59 cancer patients, 50.8% males. The predominant age group ranged from 40 to 82 years. It was observed that 96.6% of the patients were former smokers and 76.3% were former alcoholics (Table 1).

*Table. 1 – Sociodemographic profile of patients hospitalized with digestive tract cancer at the HUJBB from July 2018 to March 2020, Belém, Pará – Brazil.*

| SociodemographicVariables | Frequency | % |
|---|---|---|
| Sex | | |
| Male | 30 | 50.8 |
| Female | 29 | 49.2 |
| Age | | |
| 27 to 39 yearsold | 7 | 11.9 |
| 40 to 59 yearsold | 27 | 45.8 |
| 60 to 82 yearsold | 25 | 42.4 |
| Smoker | | |
| Non-smoker | 2 | 3.4 |
| Formersmoker | 57 | 96.6 |
| Drinker | | |
| Nondrinker | 13 | 22.0 |
| Drinker | 1 | 1.7 |
| Formerdrinker | 45 | 76.3 |

Source: data colta.

Stomach cancer predominated (57.6%), followed by intestine (16.9%) and esophagus (10.2%) (Table 2).

*Table. 2 – Types of cancer in patients hospitalized with HUJBB digestive tract cancer from July 2018 to March 2020, Belém, Pará – Brazil.*

| TypeofCancer | Frequency | % |
|---|---|---|
| Stomach | 34 | 57.6 |
| Intestine | 10 | 16.9 |
| Esophagus | 6 | 10.2 |
| Liver | 4 | 6.8 |
| Pharynx | 2 | 3.4 |
| Pancreas | 2 | 3.4 |
| Mouth | 1 | 1.7 |

Source: data colta.

In swallowing alterations, odynophagia and dysphagia were manifested by (28.8%) and (27.1%) respectively. Of the gastrointestinal symptoms, constipation prevailed (35.5%), followed by vomiting (20.3%), diarrhea and abdominal pain both with 18.6%. Among the neurological symptoms, headache (20.3%) and motor weakness (16.9%) as the most prevalent symptoms (Table 3).

*Table. 3 - Prevalence of clinical symptoms in patients hospitalized with cancer of the digestive tract at HUJBB from July 2018 to March 2020, Belém, Pará - Brazil.*

| ChewingandSwallowingChanges | Frequency | % |
|---|---|---|
| Difficulty in Chewing | 14 | 23.7 |
| Odynophagy | 16 | 28.8 |
| Dysphagia | 14 | 27.1 |
| No symptoms | 28 | 47.5 |
| Gastrointestinal Symptoms | | |
| Constipation | 21 | 35.6 |
| Vomiting | 12 | 20.3 |
| Diarrhea | 11 | 18.6 |
| Abdominal pain | 11 | 18.6 |
| No symptoms | 14 | 23.7 |
| NeurologicalSymptoms | | |
| Headache | 12 | 20.3 |
| Motor weakness | 10 | 16.09 |
| Somnolence | 6 | 10.2 |
| Others | 10 | 16.9 |
| No symptoms | 21 | 35.6 |

Source: data colta

With regard to the total number of patients, 62.7% were malnourished based on the Brachial Circumference

(BC), a high percentage compared to obesity, which had an incidence of 1.7%.Of the 25 elderly, 56% had loss of muscle mass in relation to Calf Circumference (CC). Regarding Body Mass Index (BMI), most adults (61.8%) were eutrophic, while most of the elderly (60%) were malnourished (Table 4). Both elderly and adults showed low results for overweight, 20% and 17.6%, respectively.

*Table. 4 – Classification of the nutritional status of patients hospitalized with cancer at the HUJBB from July 2018 to March 2020, Belém, Pará – Brazil.*

| BrachialCircumference - (All) | Frequency | % |
|---|---|---|
| Severemalnutrition | 15 | 25.4 |
| Moderatemalnutrition | 4 | 6.8 |
| Mildmalnutrition | 18 | 30.5 |
| Eutrophy | 18 | 30.5 |
| Overweight | 3 | 5.1 |
| Obesity | 1 | 1.7 |
| CalfCircumference – (Elderly) | | |
| Lossofmusclemass | 14 | 56.0 |
| Normal | 11 | 44.0 |
| Body Mass Index – (Adults) | | |
| Malnourished (thinness grades 1 and 2) | 4 | 11.8 |
| Eutrophic | 21 | 61.8 |
| Overweight | 6 | 17.6 |
| Grade 2 obesity | 3 | 8.8 |
| Body Mass Index – (Elderly) | | |
| Malnourished | 15 | 60.0 |
| Eutrophic | 5 | 20.0 |
| Overweight | 5 | 20.0 |

Source: data colta.

Weight loss, in relation to time, 31.9% of hospitalized patients suffered significant weight loss and 68.2% had severe loss (Table 5).

*Table. 5 – Classification of weight loss percentage in relation to time of patients with cancer of the digestive tract admitted to the HUJBB from July 2018 to March 2020, Belém, Pará – Brazil.*

| Time | Significantloss (n=14) | Seriousloss (n=30) |
|---|---|---|
| 1 week | 5 (11.4) | 0 |
| 1 month | 3 (6.8) | 0 |
| 3 months | 5 (11.4) | 0 |
| 6 months | 1 (2.3) | 30 (68.2) |

Source: data colta.

As for the frequency of food consumption, the most consumed foods daily were milk (76.3%), rice (72.9%) and cassava flour (55.9%), while the most consumed weekly foods were chicken (81.4 %), beef (72.9%) and fish (69.5%). Compared to these, the least consumed foods were pork and soy (1.7%) (Table 6).

*Table. 6 – Frequency of the food survey in relation to food consumption in general by patients with cancer of the digestive tract hospitalized at the HUJBB from July 2018 to March 2020, Belém, Pará – Brazil.*

| Food in General | Frequency of Consumption (%) | | | | | |
|---|---|---|---|---|---|---|
| | D | S | Q | M | N | R |
| Milk | 76.3 | 8.5 | - | - | - | 15.3 |
| Cheese | 22.0 | 18.6 | 8.5 | 5.1 | 6.8 | 39.0 |
| Butter | 40.7 | 6.8 | - | - | 32.2 | 20.3 |
| Margarine | 40.7 | 10.2 | - | - | 30.5 | 18.6 |
| Beef | 8.5 | 72.9 | - | 1.7 | 3.4 | 13.6 |
| Pork | 1.7 | 11.9 | 1.7 | 5.1 | 35.6 | 44.1 |
| Chicken | 6.8 | 81.4 | 1.7 | - | 6.8 | 3.4 |
| Fish | 11.9 | 69.5 | 3.4 | 8.5 | 1.7 | 5.1 |
| Egg | 22.0 | 45.8 | 3.4 | - | 8.5 | 20.3 |
| Legumes | 44.1 | 33.9 | - | 3.4 | 3.4 | 15.3 |
| Soy | 1.7 | 10.2 | 5.1 | - | 55.9 | 27.1 |
| Rice | 72.9 | 15.3 | - | - | 1.7 | 10.2 |
| Cassava flour | 55.9 | 23.7 | - | - | 8.5 | 11.9 |
| Tapioca | 8.5 | 45.8 | 8.5 | 10.2 | 10.2 | 16.9 |

D: Diary; S: Weekly; Q: Biweekly; M: Monthly; A: Rare; N: Never.

Source: data colta.

In relation to foods considered cancer promoters, sugar (64.4%) and cracker (33.9%) were the most consumed daily. In relation to the foods eaten weekly, frying had the highest consumption (49.2%), fast food and soda had a consumption of (23.7%) per week (Table 7).

Table. 7 – Frequency of the dietary survey in relation to the consumption of foods considered to promote the disease among patients with digestive tract cancer hospitalized at the HUJBB from July 2018 to March 2020, Belém, Pará – Brazil.

| Food Promoters | Frequency of Consumption (%) | | | | | |
|---|---|---|---|---|---|---|
| | D | S | Q | M | N | R |
| Cracker | 33.9 | 32.2 | - | 1.7 | 8.5 | 23.7 |
| Stuffed cookie | 6.8 | 8.5 | 1.7 | 1.7 | 45.8 | 35.6 |
| Sugar | 64.4 | 11.9 | - | 1.7 | 10.2 | 11.9 |
| Soda | 5.1 | 23.7 | 1.7 | 1.7 | 37.3 | 30.5 |
| Fried food | 11.9 | 49.2 | 5.1 | - | 16.9 | 16.9 |
| Embedded food | 5.1 | 18.6 | 1.7 | 1.7 | 47.5 | 25.4 |
| Canned food | 6.8 | 11.9 | 1.7 | 5.1 | 37.3 | 37.3 |
| Fast food | - | 23.7 | - | 3.4 | 28.8 | 42.4 |

D: Diary; S: Weekly; Q: Biweekly; M: Monthly; A: Rare; N: Never.

Source: data colta.

Among the foods identified as protective, fruit juice (57.6%), fruits (55.9%) and vegetables (44.1%) were the most consumed on a daily basis. Oats (39%), açaífruit (37.3%) and olive oil (28.8%) were the most consumed foods weekly (Table 8).

Table. 8 – Frequency of the food survey in relation to the consumption of foods considered to be protective among patients with digestive tract cancer hospitalized at the HUJBB from July 2018 to March 2020, Belém, Pará – Brazil.

| ProtectiveFoods | Frequency of Consumption (%) | | | | | |
|---|---|---|---|---|---|---|
| | D | S | Q | M | N | R |
| Oat | 28.8 | 39 | 3.4 | 1.7 | 10.2 | 16.9 |
| Olive oil | 28.8 | 28.8 | - | - | 22 | 20.3 |

| ProtectiveFoods | Frequency of Consumption (%) | | | | | |
|---|---|---|---|---|---|---|
| | D | S | Q | M | N | R |
| Açaí fruit | 25.4 | 37.3 | 3.4 | 8.5 | 11.9 | 13.6 |
| Fruit | 55.9 | 33.9 | - | 1.7 | 1.7 | 6.8 |
| Fruitjuice | 57.6 | 28.8 | - | - | 1.7 | 11.9 |
| Vegetables | 44.1 | 33.9 | - | 3.4 | 3.4 | 15.3 |

D: Diary; S: Weekly; Q: Biweekly; M: Monthly; A: Rare; N: Never.

Source: data colta.

## V.    DISCUSSION

In the present study, there was a predominance of digestive tract cancer in adults compared to the elderly, and smoking and alcohol were present in most patients. The association between smoking and alcohol abuse are among the main risk factors for the onset of cancer[11].

In this context, some cancers are directly related to these habits, such as: stomach, pancreas, oral cavity, liver, oropharynx, esophagus, colon, among others, due to inorganic components (potassium, sodium, aluminum, copper), carcinogenic aromatic hydrocarbons or not proven to be carcinogenic, nitrogenous bases and alkaloids, such as nicotine; in the case of cigarettes[12]. Alcohol, in turn, favors the malignancy of tobacco substances, as it dissolves them, leaving them in high concentration. Thus, the association of smoking with alcoholic beverages becomes one of the most common causes of malignant neoplasm[13].

In this study, the types of cancer that most affected the patients were stomach, intestine and esophagus. It was also observed that the most common was stomach with 57.6%, confirming the high prevalence of this in the Brazilian population, which was elucidated by the National Cancer Institute [14] when considering it the third most common among men and fifth among women. Bowel cancer had an occurrence of 16.9% among the interviewed patients and is considered a serious public health problem in the world, being also identified as the third most common type of cancer globally[14]. The third most frequent cancer among the population studied is esophageal cancer. It currently represents the eighth most common neoplasm in the world and the sixth most recurrent cause of death from cancer[15].

The clinical symptoms of the disease were classified into three categories: Changes in the chewing and swallowing process, gastrointestinal symptoms and neurological symptoms. Generally, gastrointestinal clinical alterations are related to chemotherapy treatment,

as it is considered systemic, it affects both healthy cells and neoplastic cells, causing adverse reactions in the patient. Gastrointestinal tract cells with high replication capacity are the most affected during anti-neoplastic therapy, which explains the persistence of symptoms such as: constipation, nausea, vomiting, anorexia, diarrhea and dysphagia and odynophagia in patients[16].

Nutritional status is the most impacted by cancer. The study classified the nutritional status of the investigated patients based on the BMI of adults and the elderly, the BC of all hospitalized patients and the CC of the elderly. With regard to adults, the present study did not show a high prevalence of malnutrition according to BMI. A result similar to the research was found in the study[17], which revealed 45% of adults with normal weight, out of a population of 40 patients.

BMI is the most used anthropometric parameter, however its use in the elderly is questioned, as it does not take into account the change in fat distribution in the physiology of aging. The verification of anthropometric measurements can change in the elderly by bending the back and shortening the vertebrae, decreasing height and, as a result, increasing BMI values. Lipschitz, in 1994, suggested a classification that took into account the bodily changes that result from aging, as well as the susceptibility of geriatric patients to malnutrition; since, in addition to the loss of lean mass, they have a higher percentage of fat when compared to adults[18].

It is important to emphasize that BMI has a restricted value in cancer patients, since they have increased inflammatory parameters, which can cause proteolysis and increased extracellular fluid, leading to water retention and edema. Thus, it camouflages the real nutritional status. Besides that, many chemotherapy treatments make use of hormone therapy and or glucocorticoids, which can also cause adverse effects that disguise the nutritional status and disguise the actual weight. As for the high prevalence of malnourished elderly, this can be explained due to the intrinsic physiological changes that they present to the aging process, such as reduced protein synthesis and sarcopenia, which associated with the adverse effects of treatment increase the risk of malnutrition and foster inappetence[19].

In contrast to the BC findings, it evidenced a high occurrence of malnourished people among adults and the elderly (62.7%). Although the BMI of adults showed mostly eutrophy, around 62%, the adequacy of BC better defines the nutritional profile of these patients, as it represents the sum of bone, muscle and adipose tissues[20]. In their study, they stated that in digestive

system neoplasms, depending on the physical location of the tumor, it can cause gastrointestinal symptoms that result in lower food intake, as well as reduced absorption and, consequently, bioavailability, negatively reflecting on the nutritional status of the patient, which contributes to malnutrition. Furthermore, most cancer patients are in critical condition. In this sense, metabolic alterations (protein hypercatabolism and hypermetabolism) are also capable of triggering malnutrition, due to increased caloric expenditure[21].

In concern to the 25 elderly, 56% had loss of muscle mass in relation to CC. This is considered a sensitive measure to monitor and assess muscle mass loss in older adults of both sexes[18]. Its decrease implies a reduction in muscle strength and is related to the risk of developing the syndrome called sarcopenia. However, it is noteworthy that the calf perimeter cannot be used as an isolated indicator to assess the nutritional status of the elderly[22]. It is noteworthy that sarcopenia is an integral part of cancer cachexia and is recognized as a geriatric syndrome in these patients, which is defined as a combination of loss of lean mass and physical performance[23].

Analyzing the weight loss percentage in relation to time, it was found that 31.9% of hospitalized patients had significant loss, 68.2% had severe weight loss. Possibly, in some of these individuals, the weight loss process was already underway at the time of diagnosis, because according to Santos et al. [24] significant catabolic changes that cause cachexia - a syndrome that contributes to progressive marked weight loss, muscle tissue catabolism , related or not to the adipose tissue – are characteristic of the disease. The weight losspercentage in relation to time was an important variable to be analyzed, as it is a valid factor in determining the risk of malnutrition, and may reflect situations of neoplastic cachexia[25]. Of the 59 patients, 15 did not experience weight loss.

With regard to food consumption, this was assessed by frequency of intake category (daily, weekly, fortnightly, monthly, rare and never). And, also, subdivided as consumption of foods in general, foods that promote and foods that protect the disease. In general, milk, rice and cassava flour were the most consumed daily, while chicken, beef and fish were the most consumed weekly. It is important to highlight that food has a direct influence on carcinogenesis, playing an important role in the stages of initiation, promotion and development of cancer. It is estimated that nutrition and lifestyle factors are determinant in one third of all cancer cases[26]. WHO (2015) draws attention to the

consumption of red meat (beef, pork and sheep) as being carcinogenic to humans. Furthermore, both the cooking of red meat (hydrocarbon release) and the high intake of iron from this food play important roles in the development of cancer[27].

According to the subcategories of foods in this study, those considered to be promoters of the disease have broad importance in the discussion, given their contribution to the development of malignant neoplasms. Thus, according to information from the International Agency for Research on Cancer [28], diet may be related to some types of cancer, especially stomach, liver, rectum and intestine (especially colon cancer). In this study, it was observed that the most consumed promoting foods were: sugar (64.4%), fried foods (49.2%), biscuits (33.9%), and fast food and soda (23.7%). It is thus correlated that industrialized foods have nitrates and nitrites in their composition, which are widely used in the food industry to preserve and enhance flavor, such as sausages and preserves. However, the high consumption of these foods is closely linked to the increased risk of gastrointestinal cancer. Such substances are transformed into nitrosamines in the gastrointestinal tract (TGI), being considered one of the main carcinogens. Thus, foods preserved in salt, such as dried meat, jerky and salted fish, are also associated with the development of cancer, in regions where the consumption of these foods is indiscriminate[26].

As for the consumption of foods known to be protective for the prevention of the disease, the frequency with which they presented themselves daily and weekly was considered interesting, as follows: fruits (55.9%), natural fruit juice (57.6%), vegetables (44.1%), oats (39%), açaí fruit (37.3%) and olive oil (28.8%). In this sense, fruits, vegetables and vegetables play a prominent role in cancer prevention, as they have bioactive compounds, vitamins and minerals such as beta-carotene, fiber, anthocyanins, lycopene, flavonoids, selenium, lutein, vitamin C, E and zinc. The prominent position of these foods is due to their antioxidant function and their action in the functioning of the intestine. Therefore, the consumption of these foods must be a priority[29].

Despite the daily consumption of fruits and vegetables being above 50% and being a health benefit to patients, the consumption of foods that may favor the onset of the disease was highly significant (96.6%). This may be associated with the lack of information on healthy eating[26], as well as lifestyle habits that do not comply with the protection of your health (cigarette consumption and alcoholic beverages) which leads to an increase in

oxidative stress, favoring the high production of free radicals[29].

## VI. CONCLUSION

Although adults were eutrophic in terms of BMI, malnutrition was a prevalent clinical condition in cancer patients with malignant neoplasms of the digestive tract, with the elderly being the most affected, associated with gastrointestinal symptoms resulting from antineoplastic treatment, which impair adequate nutrition, due to inappetence, ending up reducing food intake. Therefore, the relevance of more immediate nutritional assessment in this group for preventing the risk of malnutrition is highlighted.

Although in this study the consumption of protective foods was satisfactory, the consumption of carcinogenic foods was more expressive. Ratifying that the unrestrained consumption of these foods is related to the onset of the disease. The assessment of food consumption among cancer patients should be routine, as it will provide subsidies for more targeted nutrition education, which is important for therapy, not only for its nutritional aspects, but also for its symbolic and subjective dimension**.**

## VII. LIMITATION OF THE STUDY

The present study faced some significant limitations regarding its sample size. Due to the Covid-19 pandemic, which started in 2020, access to patients was restricted. As a result, the sample size was reduced, undermining much of the initial research objective.

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