



NUTRITIONAL EPIDEMIOLOGICAL PROFILE OF THE POPULATION ASSISTED IN A CANCER PREVENTION CAMPAIGN

*Perfil epidemiológico nutricional da população assistida em campanha de prevenção do
câncer*

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Abstract: Goal: To describe the epidemiological and nutritional profile and lifestyle habits of the population assisted in the 8th Task Force for the cancer prevention in the year 2018, held in the city of Montes Claros, MG. **Method:** It is a descriptive epidemiological study, with data obtained in visits in the nutrition stand in the 8th Task Force to prevent cancer. A structured questionnaire was used covering sociodemographic characteristics, life habits, cancer family history and food consumption. The nutritional status was evaluated according to the body mass index. The data were tabulated and analyzed by means of descriptive statistics. **Results:** 321 individuals participated, being 81.9% females and with a mean age of 52.45 (± 14.06) years. Among the participants, 47.2% reported cancer family history. The practice of physical activity three times a week was reported by 29.0%. The prevalence of excess weight was 66.8%. The daily food consumption of fruits and vegetables was 34.1% and 50.9%, respectively. **Conclusion:** The nutritional approach and suitability of the life habits must be actions incorporated for the cancer prevention.

Keywords: Nutrition in public health; Disease Prevention; Nutritional Status; Oncology.

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Resumo: Objetivo: Descrever o perfil epidemiológico nutricional e hábitos de vida da população assistida no 8º Mutirão de prevenção ao do câncer no ano de 2018, realizado na cidade de Montes Claros, MG. **Método:** Trata-se de um estudo epidemiológico e descritivo, mediante dados obtidos em atendimentos na tenda da nutrição no 8º Mutirão de Prevenção ao Câncer. Utilizou-se um questionário estruturado abrangendo características sociodemográficas, hábitos de vida, histórico familiar de câncer e consumo alimentar. Avaliou-se o estado nutricional segundo o índice de massa corporal. Os dados foram tabulados e analisados por meio de estatística descritiva. **Resultados:** Participaram 321 indivíduos, sendo 81,9% do sexo feminino e com média de idade de 52,45 ($\pm 14,06$) anos. Entre os participantes 47,2% relataram história familiar de câncer. A prática de atividade física em três vezes na semana foi relatada por 29,0%. A prevalência de excesso de peso foi de 66,8%. O consumo alimentar diário de frutas e verduras foi de 34,1% e 50,9%, respectivamente. **Conclusão:** A abordagem nutricional e adequação dos hábitos de vida devem ser ações incorporadas para a prevenção do câncer.

Palavras-chave: Nutrição em Saúde Pública; Prevenção de Doenças; Estado Nutricional; Oncologia.

INTRODUCTION

Cancer is characterized as a silent disease. It is the main cause of death in the world, reaching approximately six million people a year. If preventive measures for the disease are not taken, it is estimated that 84 million people will die due to the disease in the next ten years¹. The growing incidence of cases of malignant neoplasm has caused a change in the epidemiological profile of the population, either by increasing exposure to carcinogenic factors, the population aging, the improvement of technologies for diagnosis, as well as by the elevation of the number of deaths by cancer².

The cancer appearance is associated with multicausality of carcinogenic factors, i.e., agents able to modify the DNA structure of a cell. These factors are divided into: intrinsic and extrinsic. The intrinsic ones include: age, genetic constitution or genetic predisposition; and the extrinsic ones come with external influences, i.e., factors arising from the environment, physical, chemical and biological, also style, life habits and food, mainly due to exposure to tobacco, sedentary lifestyle and foods rich in saturated fat, nitrosamines, tar, aflatoxin level, dyes and preservatives, as well as overweight and obesity. The extrinsic risk factors are targets of prevention of primary order, which refer to any strategy aimed to reduce exposure to these factors by the population. While the secondary prevention covers actions, which allow the early diagnosis of the disease³.

According to INCA, the strategies that encompass the primary prevention may be able to prevent a third of cases of cancer, making nutrition an important ally in the reduction of risk factors associated to inadequate eating habits⁴.

Among the various forms studied for the cancer prevention, the consumption of functional foods, which are those to be consumed in the diet, in addition to their nutritional functions, produce some physiological and metabolic effects in the body⁵.

Foods that contain antioxidants in its composition are characterized as functional foods, and it is possible to highlight the carotenoids like lycopene, lutein, zeaxanthin and vitamins A, C and E, these phytochemicals protect the cells against the free radicals action, since the state of initiation of the carcinogenic process is associated, in the majority of cases, with the attack of free radicals in the cell genetic material, characterizing such foods as chemopreventive⁶.

In vivo studies in animal models suggest that the consumption of lactobacilli and bifidobacteria have an efficacy in the intestinal microbiota, contributing to reduce fecal enzymes, thus inhibiting the formation of tumor cells bonding to or inactivating the carcinogens. Another probiotic that presents benefits against cancer is the *L. acidophilus*, which reduces levels of enzymes and convert pre-carcinogens which predicts a reduction in the cancer incidence⁷.

The supply and inadequate nutrition are classified according to the National Cancer Institute (INCA), as the second leading cause of cancer that can be prevented. The change in dietary practices is one of the most effective measures of prevention. Taking care of food and incorporate the practice of physical activity in the individuals daily life will result in maintaining adequate weight, an essential factor for the health preservation and the cancer development cancer prevention⁸.

Thus, the study herein aimed to describe the epidemiological and nutritional profile and lifestyle habits of the population assisted in the 8th

Task Force for the cancer prevention in the year 2018, held in the city of Montes Claros, MG.

METHODOLOGY

It is a descriptive and epidemiological study, conducted in the city of Montes Claros - MG, upon data obtained in visits to the population assisted by the 8th Task Force for the Cancer Prevention - carried out by the Associação Presente in the year 2018, occurred in the nutrition stand. This sample was composed of 321 individuals, and the data collection was carried out by a team specialized in nutrition.

A questionnaire containing sociodemographic variables was used (gender, age, marital status and education), life habits (alcoholism, smoking and practice of physical activity), family history for the cancer development (presence or absence), nutritional status (through the calculation of body mass index (BMI) and food consumption frequency questionnaire (food consumption). The individuals were classified according to the alcohol consumption in an alcoholic person, ex-alcoholic person and the one who never drank and as tobacco smoker, ex-smoker and the one who never smoked.

The body mass index (BMI) was determined by the nutritional status, according to the cutoff points: BMI = weight (kg)/height (m)², using the classification: Below 20- low weight; from 20 to e 25- eutrophic; 25 to 30 - overweight; 30 to 35- mild obesity; 35 to 40- moderate obesity; 40 to 50 - morbid obesity, proposed by the World Health Organization⁹.

The individuals' food consumption was evaluated by means of the frequency of weekly intake of fruits, juices, vegetables or legumes, salads, sweets (candies, sweets, chocolate, chewing gum, sweets, lollipop), bread/cookie, red meat, chicken, pork and fish), fried snacks (fried

potatoes, *coxinha*, kebab, pastries). The weekly food consumption was categorized as never, 1 to 2 times, 3 to 4 times, 5 to 6 times and 7 times.

This study was conducted in accordance with the precepts established by Resolution 466/12 of the National Health Council of the Ministry of Health, in accordance with the approval of the Research Ethics Committee of UNIMONTES, upon opinion number 2.599.222.

The data were tabulated in the Statistical *Package for Social Science* (SPSS), version 20.0 for Windows®. The variables descriptive investigated analyzes according to the characteristics and frequencies of occurrence, which will be presented through tables and graphs.

RESULTS

321 individuals participated of this study, the majority was females (81.9%) and with a mean age of 52.45 (±14.06) years. Approximately half of the participants were married or under common law marriage and up to high school education (Table 01).

Table 01 - The individuals' demographic profile. Montes Claros, Minas Gerais, (n- 321), 2018.

Characteristics	N	%
Sex		
Female	258	81.9
Male	57	18.1
Age		
<20 years	13	4.1
21-30 years	16	5.1
31-40 years	29	9.2
41-50 years	48	15.3
51-60 years	103	32.8
> 61 years	105	33.4
Marital Status		
Single	74	23.3
Married/Common Law Marriage	173	54.6

Continuation of Table 01

Characteristics	N	%
Marriage		
Separated/Divorced	37	11.7
Widower	33	10.4
Education		
Illiterate	18	5.7
Incomplete Elementary School	100	31.4
Complete Elementary School	36	11.3
Incomplete High School	38	11.9
Complete High School	101	31.8
Incomplete Upper Education	05	1.6
Complete Upper Education	20	6.3

Among the participants, 47.2% reported cancer family history. There was a higher prevalence of individuals who had never smoked (82.3%) and never drank (72.6%). It was observed that the practice of physical activity three times a week in 29% of the participants (Table 02).

Table 02 - Descriptive characteristics of the individuals according to cancer family history and life habits. Montes Claros, Minas Gerais, (n- 321), 2018.

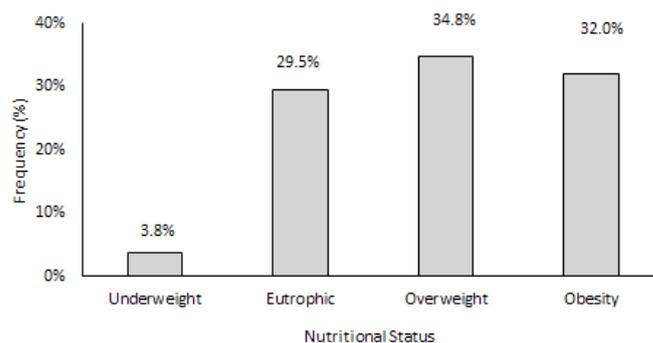
Characteristics	N	%
Cancer Family History		
Yes	149	52.8
No	133	47.2
Smoking		
Yes	18	5.6
Never smoked	263	82.3
Ex-smoker	39	12.1
Alcoholism		
Yes	75	23.4
Never drank	231	72.6
Ex-alcoholic	13	4.0

Continuation of Table 02

Characteristics	N	%
Weekly physical activity		
None	135	42.1
Once	43	13.4
Twice	44	13.7
Three or more times	93	29.0

The diagnosis of nutritional status of the study participants is represented in Figure 1. It was found that the prevalence of excess weight was 66.8%, with 34.6% (111) of overweight and 31.8% (102) of obesity.

Figure 01 - The Individuals Nutritional status. Montes Claros, Minas Gerais, (n- 321), 2018.



The food and juices consumption daily were observed in up to one-third of the individuals. The consumption of vegetables and bread/cream crackers in this same frequency was approximately 50%. The highest frequency of weekly intake of chicken and pork meat was once or twice, representing 51.4%, 56.3% respectively. The consumption of sweets is limited to up to two times a week (71.9%) in the majority of the interviewees. The absence of fish in feeding was observed in 41.7%. And more than half do not consume fried savories (51.7%) (Table 03).

Table 3 - Frequency of weekly food consumption by food groups of participants. Montes Claros, Minas Gerais, (n- 321), 2018.

Consumption	Never	1 to 2 times	3 to 4 times	5 to 6 times	7 times
Fruits	24(7.5%)	89(27.8%)	63(19.7%)	35(10.9%)	109(34.1%)
Juices	41(12.8%)	86(26.9%)	44(13.8%)	51(15.9%)	98(30.6%)
Vegetables	16(5.0%)	45(14.1%)	51(15.9%)	45(14.1%)	163(50.9%)
Candies	121(37.8%)	109(34.1%)	31(9.7%)	20(6.3%)	39(12.2%)
Bread/Cookies	31(9.7%)	41(12.8%)	54(16.8%)	51(15.9%)	144(44.9%)
Red meat	38(11.8%)	102(31.8%)	70(21.8%)	50(15.6%)	61(19.0%)
Chicken	20(6.2%)	165(51.4%)	66(20.6%)	45(14.0%)	25(7.8%)
Pork	81(25.3%)	180(56.3%)	34(10.6%)	13(4.1%)	12(3.7%)
Fish	134(41.7%)	155(48.3%)	15(4.7%)	08(2.5%)	09(2.8%)
Fried savories	165(51.7%)	106(33.2%)	22(6.9%)	14(4.4%)	12(3.8%)

DISCUSSION

In this study, it was observed that a large part of participants of the nutrition stand in the 8th Task Force for the Cancer Prevention had a cancer family history, excess weight, inadequate dietary habits and sedentary lifestyle. It is considered that among the factors related to cancers, in addition to the genetic aspects, the important influence of external agents to the body, related to the environment and the life style of the population. In this perspective the health actions for the promotion of individual attitudes to the promotion, protection and prevention of diseases, as well as the healthy public policies for changes in life styles stand out.

Upon assessing the risks for cancer, the investigation of the family history can contribute to an increased risk. In relation to the history of neoplasia in the family, of the 282 interviewees, 47.2% reported having some relative already affected by this pathology. The importance of knowing the family history is in fact that the cancer is a genomic disease, which arises as a consequence of the DNA cells alteration, and such changes have a greater prevalence in individuals in the same family, which increases the chances of the emergence of a neoplasia¹⁰.

Regarding smoking, 320 people were questioned about this habit, and after the data analysis it was confirmed that 82.3% had never smoked and 12.1% (corresponding to 39 persons) are ex-smokers. The result found was below the average of the Brazilian capitals and Federal District, according to the writings of Malta *et al.* (2010), where a prevalence of 16.1% of smokers was accounted in the cities surveyed¹¹.

Whereas in relation to the intake of alcoholic beverages, 231 people (72.6%) reported never having drunk and 75 (23.4%) have confirmed habit of drinking alcoholic beverages. These numbers are closer to those found in studies of Bastos, Bertoni and Hacker (2008) in which 18% of the respondents from 16 to 65 years confirmed regular consumption of alcoholic beverages¹².

The results of this study showed that 42.1% of the investigated people did not practice any kind of physical activity. These data are below, only the estimate presented in the United States, by the *Lancet Physical Activities Series Working Group*, in which it was demonstrated that 51% of the Americans are physically inactive. Regarding the worldwide prevalence, it was found that 31% of the population did not reach the levels recommended by the experts¹³.

A study carried out in Europe, showed

that physical activity significantly reduces the risk of the main types of cancer, and that between 9% to 19% of cases of cancer are attributed to the lack of physical activity¹⁴.

Concerning the regularity of the practice, the present investigation revealed that 27.1% of the individuals exercised physical activity once or twice a week. According to the public health recommendations for physical activity and prevention of cancer, it is suggested that, be held 30-60 minutes of activities with moderate or vigorous intensity performed preferably 5 days a week (minimum of 150 minutes a week)¹⁵.

In a robust longitudinal study (sample composed by 1.44 million individuals), conducted by Moore et al.¹⁶ the researchers showed the association of the practice of regular physical activity, with 26 different types of cancers. The results showed that 13 of the 26 diseases investigated, presented significant results, with lower risks of developing cancer. The findings are widely generalizable for different populations, including obese or overweighted individuals. These results highlighted the practice of physical activity as a key component to the population by prioritizing the cancer prevention and control¹⁶.

Several researchers showed that different types of physical activities, performed with a frequency have the ability to reduce considerably the mortality rate among the individuals. On the other hand, the sedentary lifestyle is directly associated with the possibility of the development of several diseases, among them cancer¹⁷. The evidence highlighted an inverse relationship between physical activity and risk of renal cancer, bladder, liver, colorectal, pancreas, cervix, breast and stomach. During certain periods of life, such as adolescence, physical activity may provide

additional protection against breast cancer^{18,19,20}.

A research involving cancer of the head and neck, corroborated with the premise that the increase of hours of physical activity per week is associated with a reduced risk of the disease [OR] = 0.58; 95% confidence interval of 95% [95] = 0.35-0.96)²¹.

Physical activity has a protective role regarding some types of cancer, especially colon and those related to female hormones such as the breast and endometrial cancer. Physical activity stimulates the intestinal transit, so that potentially carcinogenic chemicals pass more quickly by the intestine, besides reducing the levels of insulin and balance hormones, which at high levels, stimulate the growth of tumors²².

The guided practice of physical activity, based on frequency, volume and intensity, has the capacity to significantly increase the number of natural killer cells (NK) circulating in the blood, which have an important role in the increase of immunity. The training can induce a redistribution of NK cells, which reflects in a process of recovery and adaptation in response to physiological stress²³.

Regarding the participants' nutritional status, it was found that the prevalence of excess weight was 66.8%, showing that 31.8% of the individuals were diagnosed with obesity. The excess weight and cancer are appointed as the main global epidemics nowadays. Obesity is the second largest preventable risk factor for cancer, losing only to smoking^{24,25}. The increase in body mass index (BMI) is directly associated with an increased risk of common and less common malignancies. For some types of cancer, the associations differ between sexes, ages and populations of different ethnic backgrounds²⁶.

Worldwide it is estimated that 481,000 or

3.6% of all new cases of cancer in adults (30 years of age or older after the period of ten years) in 2012 were attributable to high BMI²⁴. A meta-analysis carried out by a team of researchers pointed out that the dose-response of prospective cohort studies showed that each 5 kg/m² of increase in BMI corresponded to an increase of 2% in the risk of breast cancer in women²⁷.

Concerning the association of obesity and the increase in the risk of developing cancer, evidences were found related to breast cancer, endometrial cancer, colon, kidneys, malignant esophageal adenomas, pancreas, prostate and in its most aggressive forms as the gallbladder and lung^{28,29}.

Through the numerous evidences related to physical inactivity and consequent excess weight, researchers have emphasized the need for a global effort to reduce the growing number of people with high BMI. Assuming that the association between high BMI and cancer is causal, the continuation of the current standards weight gain of the population will lead to continued increases in future burden of cancer³⁰. Concerning the exposed, until the present moment, it is possible to infer that the best form of cancer prevention is to adopt a healthy life style, combining proper diet and physical exercise^{31,32}.

Regarding the eating habits, the great majority of cases, around 80% of malignant tumors are related to environmental risk factors, which include the style of life and the habits adopted by people. There are several scientific evidences that nutrition plays an important role in carcinogenesis. Of the cases that most favors are attributed to environmental factors, diet and smoking, these being those that provide greater percentage, followed by occupation, alcohol consumption and chemical additives³³. It is estimated that approximately 30 to 40% of all types of cancers can be prevented by the accession of life style and healthy patterns⁴.

In relation to dietary factors, it is verified that the chicken consumption was evidenced with higher frequency of 1 to 2 times per week, 21.8% of the participants have the habit of consuming red meat 3 to 4 times a week, a study conducted in nine countries with almost 500,000 people, it was found that the habit of consuming red meat significantly increased the occurrence of colon cancer, compared with a population that consumed red meat only once a week. And that the replacement of red meat by fish decreased the rates of cancer of the large intestine³⁴.

In this study, it was observed an absence in the fish consumption in 41.7% of the individuals. The omega 3 nutrient present in fish may modify the process of carcinogenesis, because it has the function to change the immune response to tumor cells and modulate inflammation, which impacts on cell proliferation and apoptosis³⁵.

As for the consumption of fruit and vegetables it was identified that 27.8 and 14.1% of individuals consume once to twice a respectively. According to WHO the recommendation would be 400g a day so that it is possible to obtain a significant nutritional gain in the prevention of diseases³⁶.

Dietary factors that protect against carcinogenesis are the fruits and vegetables pointed out as one of the main protective factors, this is because the fruits and vegetables possess antioxidants, such as vitamin A, C, E and Selenium, as well as fibers that can act against the carcinogenic process of several types of cancer³⁷.

CONCLUSION

This study showed that the population assisted in the nutrition stand in the 8th Task Force for the Cancer Prevention presents prevalence of excess weight, inadequate food intake and sedentary lifestyle. It is possible to infer the need

for incorporation of healthy life habits for the well-being and quality of life of an individual, as well as for the cancer prevention. In this perspective, it is recommended the implementation of public policies for the promotion of the population health.

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