DEMETRA
Alimentação, Nutrição & Saúde

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Characterization of the food intake and nutritional profile of oral cavity cancer survivors and the adherence degree to cancer prevention recommendations issued by the World Cancer Research Fund and the American Institute for Cancer Research Institute

Caracterização do perfil alimentar e nutricional dos sobreviventes de câncer de cavidade oral e grau de adesão às recomendações de prevenção ao câncer emitidas pelo Fundo Mundial de Pesquisa de Câncer e Instituto Americano de Pesquisa de Câncer

Abstract

Introduction: Survivors of oral cavity cancer (OCC) under control usually have numerous sequelae resulting from oncological treatment, which can compromise their diet and, by extension, meet the guidelines for diet and proper weight issued by the World Cancer Research Fund International-WCRF and the American Institute for Cancer Research-AICR. *Objective:* To evaluate the dietary profile and nutritional status of oral cancer survivors and verify the degree of their adherence, the guidelines for healthy eating and body weight issued by WCRF/AICR. *Method:* Cross-sectional study which assessed the nutritional status by the Subjective Global Assessment produced by the patient (PG-SGA) and body mass index (BMI) of 20 patients. Data such as social condition and clinical history were collected from medical records. Food consumption was assessed using a 30-day food diary. Food data and body weight received a score of points according to a greater or lesser degree of adherence to WCRF/AICR recommendations. *Results*: 80% of patients were moderately malnourished or suspected of malnutrition by PG-SGA. According to BMI 10% of participants were malnourished, 45% eutrophic and 35% were overweight. An average score of 2.64 ± 0.55 adherence to the recommendations of adequate weight and healthy eating was found, showing compliance with less than 50% of the WCRF/AICR recommendations. *Conclusion:* Survivor patients of OCC patients from the present study are at risk of malnutrition or have moderate malnutrition; and have high symptomology, which negatively impacts food intake and adherence to recommendations of WCRF/AICR.

Keywords: Oral cavity cancer. Xerostomia. Cancer survivors. Healthy eating.

Resumo

Introdução: Sobreviventes do câncer de cavidade oral (SCCO) em controle normalmente apresentam inúmeras sequelas derivadas do tratamento oncológico, o que pode comprometer sua alimentação e, por extensão, o atendimento às diretrizes de alimentação e peso adequado emitidas pelo Fundo Mundial para Pesquisa do Câncer/Instituto Americano de Pesquisa para o Câncer (WCRF/AICR). *Objetivo:* Avaliar o perfil alimentar e o estado nutricional de sobreviventes de câncer de cavidade oral e verificar o grau de sua adesão, as diretrizes de alimentação saudável e peso corporal

emitidas pela WCRF / AICR. *Método:* Estudo transversal que avaliou o estado nutricional pela Avaliação Subjetiva Global produzida pelo paciente (ASG-PPP) e índice de massa corporal (IMC) de 20 pacientes. Dados como condição social e histórico clínico foram coletados em prontuário. O consumo alimentar foi avaliado por meio de um diário alimentar de 30 dias. Os dados alimentares e o peso corporal receberam um escore de pontos conforme maior ou menor grau de adesão às recomendações WCRF / AICR. *Resultados*: 80% dos pacientes encontravam-se com desnutrição moderada ou suspeita de desnutrição pela ASG-PPP. Pelo IMC, 10% dos participantes estavam desnutridos, 45% eutróficos e 35% apresentavam sobrepeso. Foi encontrado escore médio 2,64 ±0.55 de adesão às recomendações de peso adequado e alimentação saudável, demonstrando atendimento de menos de 50% das recomendações WCRF / AICR. *Conclusão*: Os pacientes SCCO do presente estudo apresentam risco de desnutrição ou estão com desnutrição moderada; e possuem alta sintomatologia, que impacta negativamente na ingestão alimentar e na adesão às recomendações da WCRF / AICR.

Palavras-chave: Câncer de cavidade oral. Xerostomia. Sobreviventes de câncer. Alimentação saudável.

INTRODUCTION

Cancer survivors, by definition, are all people who are diagnosed with cancer, regardless of the stage of the disease or whether they started, ended or mantained oncological treatment.[1]

The number of cancer survivors has been increasing in proportion to the epidemic of this disease, due to progress in the area of diagnosis and treatment. Data from the 3rd edition of the Cancer Atlas indicate that, in 2018, there were approximately 43.8 million people living with a diagnosis of cancer in the last five years. Within that same year, projections indicated 18 million new cases of cancer. The increase in cancer survivors represents a worldwide challenge for health and social security systems, considering the physical, social and mental limitations often caused by cancer treatment in this group. It is estimated that, in Brazil,more than a hundred and sixty-two thousand cancer survivors of all ages and sex are living with some disability caused by the disease and treatment.[2]

Oral cavity cancer (OCC) is the 4th most common type in men and the 12th most common among all types of cancer. Its incidence has increased in recent years, especially among young people, due to the increase in HPV virus infection. According to INCA - Instituto Nacional de Câncer (National Cancer Institute), 15.190 new cases were estimated for 2020-2022.[3]

The treatment for this disease depends on the histological type, stage of the disease and performance status of the patient; it involves surgical, chemotherapy and radiotherapy resources, which can be applied solely or in a multi-mode way.[4] It is a great challenge to ensure adequate nutrition for patients surviving oral cavity cancer OCC, since the rates of sequelae for this type of cancer are high, varying between 40 and 90% and affecting organs that are part of the digestive system.[5]

Promoting adequate food for cancer survivors is a recommendation of the World Cancer Research Fund (WCRF)/American Institute for Cancer Research (AICR). This recommendation is supported by studies which demonstrate that this population has a higher risk of developing a second tumor, which can be reduced if protective factors such as maintaining physical activity, food and adequate weight are adopted. In this sense, the WCRF published, in 1997, the first edition of the ten guidelines for diet, nutrition, physical activity in cancer prevention applicable to the general population and also to cancer survivors. In 2018, WCRF/AICR launched the third review of these recommendations, maintaining the ten guidelines that remain applicable to cancer survivors.[6]

Several studies demonstrate that adherence to dietary recommendations, healthy weight and physical activity has cancer prevention potential for each score point.[7-12] However, despite these benefits, there are few studies on adherence to these recommendations in the population in general and, above all, in cancer surviving patients, mainly in survivors of OCC.

Surviving OCC patients usually have numerous sequels derived from cancer treatment that can limit their food intake and thus compromise their nutritional status.[12-14] Among the various sequels of cancer treatment that occur in surviving OCC patients, xerostomia is prevalent in this population and has an impact on their quality of life. [5,15,16] In this sense, the purpose of this study was to assess the dietary profile and nutritional status of survivors in control of oral cavity cancer and verify the degree of adherence of this population to the guidelines for healthy eating and body weight issued by WCRF/AICR.

METHOD

Type of Study

Cross-sectional study conducted with survivors of OCC seen at the Speech Therapy Clinic of the Cancer Hospital I of the National Cancer Institute José Alencar Gomes da Silva. The study was approved by the Ethics

Committee under No. 90318418.9.0000.5274, on September 10th 2018. The sample was carried out for convenience with 20 patients derived from the study "Effects of the use of flavoring on quality of life and functional findings in patients with complaints of xerostomia submitted to radiotherapy treatment for oral cavity tumors".

The inclusion criteria were: being over 18 years old, having completed cancer treatment at least 180 days ago, being followed up at the speech therapy clinic and having a diagnosis of xerostomia. Patients with mumps, who had undergone surgery to remove salivary glands, Sjögren syndrome and/or who had previously used drugs containing atropine, antihistamines, amphetamines and phenothiazines were excluded from the study. Patients who agreed to participate in the study signed the informed consent form (ICF).

Social and Clinical Data

In the patients' medical records, clinical data were collected regarding the diagnosis and staging of the disease, cancer treatment employed, time free of disease and history of comorbidities, in addition to the presence of cancer cases in the family. The medical records also included data on alcohol and tobacco consumption, usual weight before the disease, as well as a social data (education and profession). Such data were recorded on a form for collecting social and clinical data.

Evaluation of Nutritional and Food Intake Profile

Nutritional assessment was conducted by objective and subjective methods, upon the admission of patients to the research. Nutritional assessment was performed using the following instruments: Subjective Global Assessment produced by the patient himself (PG-SGA) and body mass index (BMI).

The PG-SGA proposed by Ottery[17] was translated and validated in Portuguese by Gonzalez et al.[18] and extracted from the platform http://pt-global.org/?page_id=13<<, accessed on April 3rd, 2019.[17,18] For this purpose, data reported by the patient about the change in body weight in the last month and in the previous six months were marked in table1 of the PG-SGA form. Patients were asked about symptoms presence of impact on food intake in the past two weeks, which were duly marked in box 3. Patients were also asked about the occurrence of dietary changes in the last month (table 2) in addition to their condition in carrying out activities and function (table 4). From the completion of the first part of the PG-SGA, a numerical score was obtained which provided recommendations for the application of nutritional therapy. After determining the scores, the second part of the PG-SGA was completed by collecting data on the patient's clinical history, in addition to the degree of metabolic stress, and the data reported by the patients were marked in table 4. It was performed, with the help of ASG-PPP, a physical assessment of the patient, in order to classify the muscle, fat and water reserves of the large muscle groups in three categories: 0 - without deficit; 1 - mild deficit; 2 - moderate deficit; and 3 - severe deficit.

After collecting all these data, a general assessment of the patient's nutritional condition was carried out, classifying it as: A - well nourished; B - moderately malnourished or at risk of malnutrition; or C - severely malnourished, according to the severity of the nutritional repercussions verified by the data related to the percentage of weight change, permanent change in food intake, decrease in physical capacity, in addition to the degree of tissue loss.

Anthropometric measurements

Weight Record

The patients, wearing light clothes, were positioned standing, barefoot, at the center of a Filizola® digital scale, with capacity for 150 kg and accuracy of 100 g, when properly zero calibrated. After stabilizing the scale, the researcher recorded the patient's weight in a specific form.

Patient Height Record

Height measurement was performed using a mobile stadiometer attached to the Filizola® scale, with a 2 m height and accuracy of 1 mm. For this purpose the patient was positioned upright, barefoot with heels together, back straight and arms outstretched on the side of the body, staring up front, leaning on the scale with his back to the viewfinder. The stadiometer mobile rod was positioned on the patient's head by the researcher. After measuring the height, the data was recorded in an specific form.

Determination of BMI

From the recorded data of patients' height and weight, the BMI-Body Mass Index was determined using the formula: BMI (Kg/m^2): weight kg/height m^2. The BMI classification was carried out according to the age group of the adult individual, according to the BMI reference classification proposed by the World Health Organisation - WHO.[19]

Evaluation of Food Profile

In an specific form, the researcher carried out a 24-hour food record of each patient; in addition, each patient received a photographic manual for food quantification according to Crispim et al.[20] and a food diary to be filled in for 30 days.

An individual goal of the need for calorie and protein intake was stipulated using the pocket formula described in the Brazilian Consensus of Oncological Nutrition.[21] Then, the amount in terms of calories and proteins consumed by patients was determined through food data described in the food record with the support of the Brazilian software NUMAX® NUMAX Desenvolvimento de Sistema Ltda ME. Brazil, version 1.2.56. To evaluate the adequacy of consumption, the following relationship was established:% adequacy to caloric and protein goals = individual consumption of calories and or X100 proteins/by the goal of individual consumption of calories and/ or proteins.

Regarding the data on adherence to the recommendations for nutrition and food consumption issued by WCRF/ AICR, the methodology proposed by Shams-White et al.[22] was used. In short, the codes of each food were extrapolated from each patient's food diaries, listed as described in the Photographic Food Quantification Manual. From this code, the per capita of foods consumed from the following food groups was verified: ultra-processed foods, sugary drinks, red meats, processed meats, vegetables, fruits and vegetables, alcohol and fiber consumption. The daily average food intake per capita of these foods was included in an Excel® spreadsheet, where a score of points was applied, according to the group of food and per capita consumed, according to table 1.

Chart 1. Summary of scores of points attributed to the fulfillment of each recommendation item for the operationalization of guidelines for diet and healthy weight issued by WCRF/AIRC, 2018.

Recommendation by WCRF / AICR	OPERACIONALIZATION	POINTS
1- Mantain body weight	BMI (kg/m^2)	Points
	18.5–24.9	1
	25–29.9	0.5
	<18.5 ou ≥30	0
2- Mantain a diet rich in wholegrain cereals, legumes, fruits and beans.	Fruits and vegetables Consumption (g/dia)	Points
	400	0.5
	200–<400	0.25
	<200	0
	Total fiber (g) day	Points
	30	0.5
	15–<30	0.25
	<15	0
3- Limit the consumption of *fast food* and other processed foods rich in fat, startches and sugar	Percentage of total kcal of ultra-processed foods (aUPFs):	Points
	Tercile 1	1.0
	Tercile 2	0.5
	Tercile 3	0
4- Limit the consumption of red meat and processed meat	Total of red meat (g/week) and processed (g/week):	Points
	Red meat < 500g and processed 21g (week)	1.0
	Red meat < 500g and processed 21-100g (week)	0.5
	Red meat > 500g and processed ≥100g	0
5- Limit consumption of alcohol	Total g ethanol/day	Points
	0 (no comsumption)	1.0
	>0–≤28g men and ≤14g women	0.5
	>28g men e >14g women	0
6- Limit consumption of sugared beverages	Total sweet beverage (g/dia):	Points
	0 (no consumption)	1.0
	>0–≤250	0.5
	>250	0

Source: Adapted from Shams-White et al., 2019.

Regarding the recommendation for healthy weight, the BMI of each patient was categorized based on the BMI classification ranges defined by WHO – World Heath Organisation, and also included an Excel® spreadsheet. From the BMI score, a score point was given according to table 1.

After determining each food consumption score and healthy weight of each research participant, a sum of all points obtained from the scores, recommendations, nutrition and weight defined by WCRF/AICR was performed. Full adherence to the recommendations would give a maximum score of six points. There is no cut-off point for adhering to the recommendation, and the highest possible score is suggested.

Statistic Data

Categorical variables were described by means of absolute and relative frequency (percentage). Continuous variables were described using means and standard deviations. Associations between categorical variables were described using Fisher's exact test and Pearson's chi-square test.

The adherence of continuous variables to the normal distribution was tested by the Shapiro-Wilk test. When confirmed, differences in measures of central tendency were tested using the t test for independent samples. When not confirmed, they were tested by the Mann-Whitney test. The level of significance adopted was 5%, and the software R Core Team 2020 was used.

RESULTS

Table 1 shows the social and clinical characteristics of the 20 patients who took part in the research. The average disease-free time was 619 days.

Table 1. Social and clinical characterization of patients followed up by the speech therapy clinic who started the study. Rio de Janeiro-RJ, 2020.

Variables	N	%
Gender		
Male	12	60
Female	8	40
Age range		
Adult	12	60
Older than 60 years old	8	40
Type of cancer		
CEC Oropharynx	5	25
CEC Larinx	1	5
CEC Hard Palate	2	10
CEC Tongue	8	40
CEC Amygdala	4	20
Stage of Disease		
I	2	10
II	3	15
III	8	40
IV	7	35
Type of Treatment used		
Chemotherapy	11	55
Radiotherapy	20	100
Surgery	12	60
Education Degree		
No Education	1	5
Elementary school	9	45
High School Education	9	45
College Education	1	5
Race		
Black/Mixed breed	17	85
White	3	15
Asian/yellow	0	0
Casos de câncer familiar		
Yes	7	35
No	13	65

Legends: n – absolute frequency. % – relative percentage frequency.

Adult and male patients were the most prevalent, representing 60% of the sample. Regarding the stage of the disease, 75% of patients had a diagnosis of advanced disease in stages III and IV. Tongue CCO was the most common type of cancer, affecting 40% of the sample. Regarding education there was the same proportion 45% of patients who had completed primary or secondary education degree.

Regarding preexisting comorbidities, 20% of patients have diabetes and 40% have arterial hypertension. In addition to these diseases, 40% of patients had other comorbidities, such as hypothyroidism, heart disease and gastritis (data not shown).

Smoking was the most prevalent habit among patients in this sample, in relation to lifestyle representing 61.5% of patients, followed by ingestion of alcoholic beverages present in 53.8% of sample.

Table 2 shows the classification of the nutritional status evaluated by BMI before the disease and after completion of cancer treatment. The usual BMI shows that before the disease there was a higher prevalence of overweight and obesity, affecting 65% of the studied sample. There were no patients diagnosed before the disease with malnutrition. After cancer treatment, it was observed that 10% of patients had malnutrition, 45% of patients were rated as eutrophic and 35% were overweight and obese, according to current BMI criteria.

Table 2. Characterization of the food and nutritional profile of patients who started the study followed by the speech therapy clinic. Rio de Janeiro-RJ, 2020.

Variables	N	%
Number of meals held		
3	5	25
4	9	45
5	6	30
Consistency of diet		
Soft	9	45
Pureed	11	55
Semiliquid	0	0
Liquid	0	0
Accomplishment of recommended goals for caloric intake		
Under	5	25
Plenty accomplishment	0	0
Overload	15	75
Accomplishment of goals for protein intake		
Under	9	45
Meets the goal	0	0
Overload	11	55
Classification of typical BMI before the disease		
Low weight	0	0
Eutrophy	7	35
Overweight/Obesity	13	65
Classification of current BMI after the disease		
Low weight	2	10
Eutrophy	9	45
Overweight/ Obesity	9	45
Current classification of PG-SGA		
Well nourished - A	4	20
Moderately undernourished/risk of malnutrition - B	16	80
Critical malnutrition - C	0	0

Table 2. Characterization of the food and nutritional profile of patients who started the study followed by the speech therapy clinic. Rio de Janeiro-RJ, 2020. (Continues).

Variables	N	%
Total scoring of PG-SGA		
Up to 3 pontos	0	
4 to 8 pontos	4	20
9 pontos	16	80
Weight changes in the last two weeks according to PG-SGA		
Decreased	3	15
Stayed even	7	35
Increased	10	50
I have had the following problems that have kept me from eating enough during the past two weeks		
No problems to feed myself	1	5
No appetite, only no desire to eat	10	50
Nausea	4	20
Constipation	5	25
Bruises in the Mouth	1	5
Foods have a strange taste or no taste at all	15	75
Difficulty swallowing	12	60
Vomiting	1	5
Diarrhea	1	5
Dry mouth	20	100
Smells are bothersome	3	15
I feel full fast	8	40
Tiredness and fatigue	5	25
Pain	6	30
Others	8	40
Food intake: As compared to my normal intake, I would rate my food intake during the past month as		
The same stuff	1	5
More than usual	0	0
Less than usual	19	95
Currently my food intake is		
The same food (solid) in less quantity than usual	12	60
Smaller quantity of the same food (solid)	5	25
Only liquid food stuff	3	15
Only nutrional supplements	0	0
Very little amount of any kind of food	0	0
Only feeding through catheter or intravenous	0	0
Activities and function: Over the past month, in general I would consider my activity (function) as:		
Normal, with no limitation.	2	10
Not tottaly normal, but capable to mantain almost all normal activities.	2	10
No willingness to do most of things, but stay in bed or on a chair at least half of a day.	10	50
Capable of doing very little activity and spending a major part of the day on a chair or in bed, practically bedridden.	6	30
Rarely out of bed.	0	0
Physical Exam – Muscle Loss		
0	10	50
1	6	30
2	4	20
3	0	0

Table 2. Characterization of the food and nutritional profile of patients who started the study followed by the speech therapy clinic. Rio de Janeiro-RJ, 2020. (Continues).

Variables	N	%
Physical Exam – Fat Reserve		
0	8	40
1	8	40
2	4	20
3	0	0
Rating of weight loss in a month		
≥ 10%	0	0
5 – 9.9%	0	0
3 – 4.9%	0	0
2 – 2.9%	2	10
0 – 1.9%	0	0

Legends: n – absolute frequency. % – relative percentage frequency

Regarding the rate of nutritional status evaluated by PG-SGA, 80% of the participants were at nutritional risk. Most had symptoms with more than nine points of the total score, which indicates an urgent need for management to improve symptoms and/or nutritional intervention options, as it is described in this tool. Out of the symptoms listed in the PG-SGA , xerostomia (dry mouth) was the most prevalent in the entire group studied. In addition to this symptom, others mentioned by patients were: dysgeusia (alteration of tastebuds, with patients reporting that foods taste strange or have no taste at all), which affected 75% of patients; hyporexia (unwillingness to eat) in 50% of the sample; and dysphagia (problems with swallowing) in 60% of the population.

Regarding food intake, 90% of patients reported lower intake in the last month, compared to their usual diet, in addition to symptoms such as tiredness and failure to perform their usual activities. However, they reported weight gain.

Evaluating the data extracted from the eating habits diary and the eating registers, there is a more prevalent food intake with a creamy consistency (55%), with excessive calories and protein (75% and 55% respectively).

Out of the patients who delivered the food diary (n = 13), 46.2% did not reach half the score of points of attendance for recommendations about food and body weight issued by WCRF/AICR, as it is shown on Table 3. The average score of this group was 2.64 ± 0.55, therefore not achieving half of the recommendations, which have a maximum score of 6 points (meaning BMI of 24.96 ± 5.41 per kg/m^2). An equal proportion of patients reached a score of 3.0 to 3.75 points, which is equivalent to achieving 50% to 62.5% of the recommendations.

Table 3. Distribution of the attendance percentage to the healthy food and body weight scores issued by WCRF/AICR of patients monitored by the Phonoaudiology Clinic. Rio de Janeiro-RJ, 2020.

Categorisation of attendance score for body weight and food intake by WCRF/AIRC	N	%
< 2 points	5	38.5
2.1 – 2.9 points	1	7.7
3.0 – 3.75	6	46.1
3.8– 4.5	1	7.7

Legends: n – absolute frequency. % – relative percentage frequency

Checking the score of the stratified food groups according to the WCRF/AICR recommendations, as shown in table 4, it can be seen that 93% of the participants keep a high food intake of processed meat or red meat, therefore not achieving the recommended limit of red and processed meat consumption. Regarding the dietary calories present in the industry processed or high-calorie foods, it is observed that more than two thirds of the calories out of the consumption of those foods are part of the diet of 53.8% of the studied patients. It is important to note that according to the criteria of the WCRF/AICR recommendations, sugary beverages are classified separately from processed foods, in order to avoid double penalty on the score. Regarding the consumption of sugary drinks, it is observed that 61.5% of patients consume up to 250ml a day and 38.5% of them consume more than 250ml a day.

Table 4. Distribution of patients who completed the study monitored by the Phonoaudiology Clinic, in relation to attendance of scores of the recommendations by WCRF/AICR for prevention of cancer. Rio de Janeiro-RJ, 2020.

Recomendações WCRF/AICR	*Operacionalização*	Score	N	%
1-Mantain a healthy weight	*BMI (kg/m^2)*	Score	N	%
	18.5–24.9	1	7	53.8
	25–29.9	0.5	2	15.4
	<18.5 ou ≥30	0	4	30.8
2- Maintain a diet rich in wholegrain cereals, legumes, fruits and beans.	Consumption (g/day) fruits and vegetables	Escore	N	%
	400	0.5	01	7.7
	200–<400	0.25	04	30.8
	<200	0	08	61.5
	Total Fibers (g) day	Points	N	%
	30	0.5	01	7.7
	15–<30	0.25	04	30.8
	<15	0	08	61.5
3- Limit the consumption of *fast food* and other processed foods rich in fat, startches and sugar	Percentage of total kcal of ultra-processed foods (aUPFs):	Points	N	%
	Tercile 1	1.0	06	46.2
	Tercile 2	0.5	06	46.2
	Tercile 3	0	01	7.6
4- Limit the consumption of red meat and processed meat	Consumption red meat (g/week) and processed meat (g/week):	Points	N	%
	Red meat < 500g and processed 21g (week)	1.0	01	7.7
	Red meat < 500g e processed 21-100g (week)	0.5	03	23.1
	Red meat > 500g and processed meat ≥100g	0	09	69.2
5- Limit consumption of alcohol.	Total consumption of g ethanol/day	Points	N	%
	0 (no consumption)	1.0	13	100%
	>0–≤28g men e ≤14g women	0.5	0	0
	>28g homens e >14g mulheres	0	0	0
6- Limit consumption of sugared beverages	Consumption sweet beverage g/day	Points	N	%
	0 (nenhum consumo)	1.0	0	0
	>0–≤250g	0.5	8	61.5
	>250g	0	5	38.5

Regarding the consumption of fruits, vegetables, legumes and fibers, only 7.7% of patients meet the recommended average per capita consumption of 400g a day and 30g of fiber. Patients in this study did not have alcohol consumption during the follow-up period, which is the only criterion fully met by 100% of the participants. No patient fully complied with the recommendations for healthy eating and healthy body weight, thus not obtaining the

score of six points. There was no statistical difference between the studied variables, compared with the adherence score below or above 50% of the WCRF/AICR recommendations (table 5).

Table 5. Evaluation of grade attendance of WCRF/AICR recommendations in relation to clinical and nutricional variables of patients monitored by the Phonoaudiology Clinic who completed the study. Rio de Janeiro-RJ, 2020.

	CLASSIF SCORE WCRF		
	>50	51-90	p-value
Age range	50 (16)	57.8 (6.2)	0.408 [T]
Time (days) free of the disease	277.5 (230.3)	535.6 (577.9)	0.414 [W]
# of meals	4.5 (1)	3.8 (0.7)	0.199 [W]
ASG	15.3 (5)	12.8 (4.7)	0.410 [T]
Current BMI	26.5 (9.4)	24.3 (2.9)	1.000 [W]
Usual BMI before the disease	29 (10.4)	29.4 (3.9)	0.954 [T]

Legenda: PD– Pattern Deviation. [T] Test *t* for independent samples. [W] Mann-Whitney Test

DISCUSSION

The prevalence of OCC was higher in men in this study, as well as the incidence of other comorbidities, alcohol consumption and smoking. These findings are in agreement with other studies dealing with the topic.[23-25] Diabetes and hypertension were the most prevalent morbidities in the group studied. In relation to diabetes, studies have demonstrated an association between the disease and the incidence of head and neck cancer.[26-28]

There are nutritional repercussions resulting from cancer and cancer treatment, which have changed the profile of the nutritional status measured by BMI in this patient group. Thus, before diagnosis and treatment, the prevalence of patients in the eutrophic condition was 35%, and in the overweight/obesity condition it was 65%. By this criterion, there were no patients with malnutrition. Currently, even after the oncological treatment is concluded, it is observed that 10% of patients did not recover their initial nutritional status, with 45% of those who were classified as eutrophic after treatment and 35% overweight. The change in nutritional profile of this group may be related to the concomitant application of several modalities in the treatment of cancer and advanced disease.[29-32]

In fact, it is observed within this population the application of several therapeutic modalities of treatment, such as radiotherapy (applied in 100% of patients), chemotherapy (55%) and surgery (60%), in addition to a high prevalence of advanced cancer disease, with 75% of patients presenting disease rated as grade III and IV stages. These findings are similar to other studies which describe a decrease of up to 4% in BMI, in addition to a decrease in muscle mass and fat mass in polytracted patients who completed cancer treatment at least six months ago. This demonstrates the magnitude of the effects of cancer treatment on the nutritional status of these individuals and the extent of cancer treatment.[30,33-35]

Patients with low BMI in this group were not seen before cancer treatment. Studies demonstrate that a low BMI before cancer treatment is also implicated in a lower disease-free survival rate.[29,33-34]

The PG-SGA tool has adequate sensitiveness and specificity to diagnose the nutritional status of cancer patients, being validated for this group.[36,37] In this trial, 80% of patients, even after completing treatment, were at risk of malnutrition or moderate malnutrition. This prevalence is similar to that of other studies which observed that after chemoradiotherapy, malnutrition can increase by up to 85%.[33,38]

A multicenter study conducted in Brazil with in-patients, with head and neck cancer, identified through the PG-SGA that there is a risk of inadequate nutritional status (OR 3.7) for this group. In this study, it was also found that the single symptom of dysphagia was an independent factor for poor nutritional condition and also for survival (OR 2.75),

demonstrating the need for control of this symptom by multidisciplinary teams.[39] Similarly, in the present study, symptoms of dry mouth, dysphagia and dysgeusia were the most prevalent.

Regarding the nutritional adherence scores to WCRF/AICR recommendations, low adherence of patient was observed, with an average score of 2.64 ± 0.55. That is, 46.2% of the studied group do not meet even half of WCRF/AICR recommendations for healthy food and body weight. Only the guideline for reducing alcohol consumption was fully achieved by this group.

Adherence to recommendations for food, nutrition, physical activity and healthy weight can prevent one in four new cases of cancer.[10,40] A similar study, evaluating the degree of adherence to WCRF/AICR recommendations in colorectal cancer survivors, found a medium score of adhesion of 4.81 ± 1.04. The authors noted that higher adherence scores to the WCRF/AICR recommendations were associated with better overall health status, physical function, cognitive function, social function and less fatigue, in addition to less recurrence of tumors.[41]

In a longitudinal study of Chinese patients with breast cancer, the authors found greater adherence to the WCRF/AICR recommendations after the cancer diagnosis, increasing from 3.2 ± 1.1 (before treatment) to 3.9 ± 1.1 (p <.001) after 18 months of diagnosis. The authors also found that the increase in adherence to the WCRF/AICR recommendations after diagnosis of cancer was related to the best score for quality of life.[42,43]

To date, this is the first study on adherence to WCRF/AICR recommendations for survivors of OCC, which also evaluates the nutritional status and symptoms presented by this group. Through this test, it is possible to verify the limitations in terms of complying with healthy eating recommendations which survivors of OCC suffer. The prevalent consumption of processed meat and sugary drinks, and the low consumption of vegetables in general are related to cases of overweight/obesity. It is a risk factor for a second tumor, since it causes a chronic inflammatory process and changes the metabolism of hormones, causing cell damage and favoring the onset of the disease. A healthy diet combined with regular physical activity helps to control body weight.[41] A diet rich in fruits and vegetables is a protective factor for surviving oral cancer.[44] Within the group studied only three patients were in nutritional care (data not shown).

Although physical activity was not measured in this study, it is noteworthy a data verified by PG-SGA, which shows that 75% of the patients in this study do not feel well to perform their usual activities, staying more than half of the day lying down or sitting. This indisposition to activities in general can contribute to a sedentary lifestyle, increasing the risk factor for a second tumor.[42]

This study, to date, is the first in Brazil to evaluate the degree of compliance with the WCRF/AICR recommendations for diet and body weight through a numerical score in patients surviving oral cavity cancer. However, we identified limitations which are related to the type of cross-sectional study, potential bias in sample selection, since these patients were derived from another study with a sample selected for convenience. There is heterogeneity in the types of cancer of the oral cavity and small sample size. These limitations do not allow establishment of associations between all variables related to low adherence to the recommendations; thus, it would be necessary to conduct prospective long-term studies to verify such associations.

CONCLUSION

Throughout this study, it was found that most of the patients in this OCC sample are at risk of malnutrition or are moderately malnourished. A high percentage of symptoms was observed which impacted food intake and adherence to WCRF/AICR recommendations. The food profile was marked by high consumption of processed meats, sugary drinks and low consumption of protective foods by survivors of OCC.

From these data, it is suggested to establish new research protocols in order to correlate the factors involved in low adherence to WCRF/AICR recommendations, thus guiding formulations of new clinical protocols which would guarantee adequate food intake for the prevention of new tumors.

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