

Epidemiological Profile and Factors Related to Oral Cavity Cancer in young Brazilian Adults and its Relationship with Death, 1985-2017

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Perfil Epidemiológico e Fatores Relacionados ao Câncer de Cavidade Oral em Adultos Jovens Brasileiros e sua Relação com o Óbito, 1985-2017

Perfil Epidemiológico y Factores Relacionados con el Cáncer de Cavidad Oral en Adultos Jóvenes Brasileños y su Relación con la Muerte, 1985-2017

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ABSTRACT

Introduction: The incidence of oral cavity cancer among young adults has grown over the past few years, and the etiology and pathogenesis of the neoplasm in this group is unclear. **Objective:** To describe the profile of Brazilian young adults diagnosed with squamous cell carcinoma (SCC) in the oral cavity and the relationship with death between 1985 and 2017. **Method:** Hospital-based cross-sectional study with individuals, aged 19 to 40, diagnosed with SCC from the Brazilian Cancer Hospital Records. Descriptive analysis was performed and chi-square test, prevalence ratio (PR) and logistic regression were calculated with 95% confidence interval. **Results:** 1,761 cases of SCC in young adults were retrieved during the study period. The highest number of cases was concentrated in the age group of 31≥40 years (79.80%), males (71.90%), white (50.20%), residents of the Southeast region (36.40%), without partner (58.00%) and completed elementary education (63.40%). 61.60% were smokers, 56.70%, alcoholics, 18.50%, agriculture/aquaculture professionals and 40.70% reported family cancer history. 68.10% were diagnosed at an advanced stage and about 25.50% of the cases died. Cases in the tongue were the most frequent (42.40%) with PR=2.638 (95%CI 2.050-3.394) times higher for death compared to cases in the lip and after adjustment, the odds ratio increased to 7.832 (CI95% 2.625-23.374, p<0.0001). **Conclusion:** It is necessary to pay more attention to the population with SCC, in order to reduce the incidence and lethality of this public health problem.

Key words: mouth neoplasms; carcinoma, squamous cell/epidemiology; risk factors; young adult.

RESUMO

Introdução: A incidência do câncer de cavidade oral entre adultos jovens tem crescido ao longo dos últimos anos, não estando clara a etiologia e a patogênese da neoplasia nesse grupo. **Objetivo:** Descrever o perfil dos adultos jovens brasileiros diagnosticados com carcinoma de células escamosas (CCE) em cavidade oral e a relação com o óbito entre 1985 e 2017. **Método:** Estudo transversal de base hospitalar, com indivíduos de 19 a 40 anos, diagnosticados com CCE a partir dos Registros Hospitalares de Câncer do Brasil. Foi realizada a análise descritiva e calculados o teste qui-quadrado, a razão de prevalência (RP) e a regressão logística com intervalo de confiança de 95%. **Resultados:** Foram elegíveis 1.761 casos de CCE em adultos jovens no período em estudo. O maior número de casos se concentrou na faixa etária de 31≥40 anos (79,80%), homens (71,90%), brancos (50,20%), moradores da Região Sudeste (36,40%), sem companheiro (58,00%) e com o ensino fundamental completo (63,40%). A maioria apresentava hábitos tabagistas (61,60%) e etilistas (56,70%), 18,50% eram profissionais da agricultura/aquicultura e 40,70% relataram histórico familiar de câncer. Foram diagnosticados em estágio avançado 68,10% e 25,50% dos casos foram a óbito. Os casos diagnosticados na língua foram os mais frequentes (42,40%) e apresentaram RP=2,638 (IC95% 2,050-3,394) vezes maior para óbito em relação aos casos no lábio e após ajuste, a *odds ratio* para esse local aumentou para 7,832 (IC95% 2,625-23,374, p<0,0001). **Conclusão:** O CCE nessa população necessita de maior atenção para reduzir a incidência e a letalidade desse problema de saúde pública.

Palavras-chave: neoplasias bucais; carcinoma de células escamosas/epidemiologia; fatores de risco; adulto jovem.

RESUMEN

Introducción: La incidencia de cáncer de cavidad oral entre adultos jóvenes ha aumentado en los últimos años y la etiología y patogenia de la neoplasia en este grupo no está clara. **Objetivo:** Describir el perfil de los jóvenes adultos brasileños diagnosticados de carcinoma epidermoide (CCE) en la cavidad oral y la relación con la muerte entre 1985 y 2017. **Método:** Estudio transversal hospitalario con individuos de 19 a 40 años, diagnosticados de CCE a partir de los registros hospitalarios oncológicos de Brasil. Se realizó análisis descriptivo, y se calculó la prueba de chi-cuadrado, razón de prevalencia (RP) y regresión logística con un intervalo de confianza del 95%. **Resultados:** Un total de 1.761 casos de CCE en adultos jóvenes fueron elegibles durante el período de estudio. El mayor número de casos se concentró en el grupo de edad de 31≥40 años (79,80%), hombres (71,90%), blancos (50,20%), residentes del Sureste (36,40%), sin pareja (58,00%) y con educación básica (63,40%). La mayoría (61,60%) tenía hábito de fumar y beber (56,70%), el 18,50% eran profesionales de la agricultura/acuicultura y el 40,70% referían antecedentes familiares de cáncer. El 68,10% fueron diagnosticados en estadio avanzado y alrededor del 25,50% de los casos fallecieron. Los casos con localización en la lengua fueron los más frecuentes (42,40%) y presentaron RP=2,638 (IC 95% 2,050-3,394) veces mayor para muerte en comparación con los casos en el labio y luego del ajuste, la *odds ratio* para esta localización aumentó 7,832 (IC95% 2,625 –23,374, p<0,0001). **Conclusión:** El CCE en esta población necesita más atención para reducir la incidencia y la letalidad de este problema de salud pública. **Palabras clave:** neoplasias de la boca; carcinoma de células escamosas/epidemiología; factores de riesgo; adulto joven.

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INTRODUCTION

Oral cavity cancer is an important health public issue with more than 24 million new cases estimated worldwide for 2030¹. Brazil is the eighth in the world ranking of incidence of this neoplasm, being expected 15,210 thousand new cases for each year of the triennium 2020-2022 with an estimated risk of 10.70 for men and 3.71 new cases for women for each 100 thousand individuals².

Although more frequent from the fourth decade of life, increasing numbers for young adults have been reported in recent years³. The multifactorial etiology of the most common histological type – squamous cell carcinoma (SCC) – is typically associated with the use of tobacco and alcohol at different levels, exposure to biological agents, most of all the human papilloma virus (HPV) associated or not with genetic susceptibility in the cases of oral cavity cancer in young adults^{4,5}.

With world mortality rates nearing 1.8%⁶, SCC has worse prognosis and low survivor rate⁷ in delayed diagnosed and/or advanced staging (III and IV)^{10,11} cases in the tongue and floor of the mouth typically reported in young adults¹².

Hospital-Based Registries (HBR)¹³ gather information of the patients consulted at the hospital where they were diagnosed and/or treated for cancer and are utilized to analyze the performance of the clinical team, support to administrative planning, in addition to portraying the patient status, the conducts adopted and survivorship. Legally covered, the implementation and maintenance of a HBR is the base to list the hospital at Brazil's Oncologic Attention Network in a way that all the Brazilian States have at least one hospital approved for oncologic care¹³.

There is no consensus in the literature regarding the etiology and pathogenesis of SCC in young adults, especially due to the absence or low time of exposure to the main risk factors, probable absence of potentially malignant lesions and of the possible differentiated biological behavior of SCC diagnosed for this population^{14,15}. Likewise, methodological differences and definition of the age to classify a young adult ranging from 30 to 45 years-old make the understanding of the relation of these factors with the disease difficult for these individuals¹⁶.

This scenario encourages new studies to characterize the epidemiological profile of this group and design prevention public policies. The main objective of this study is to describe the profile and factors related to SCC in the oral cavity on young Brazilian adults and association with unfavorable outcomes as death from 1985 to 2017.

METHOD

Hospital-based cross-sectional study with young Brazilian adults diagnosed with oral cavity SCC was developed. Database was extracted from the Hospital-based Cancer Registry Computer System (SisRHC)¹⁷, at the Integrator of Hospital-based Cancer Registry (*Integrador RHC*)¹⁷. Data were collected through access to *TabNet* a technology developed by the Computer System of the National Health System (DATASUS) in May 2019, with data from all the Brazilian hospitals which forwarded their information to SisRHC in the period analyzed.

Information about young adults (19 to 40-years-old) with histological diagnosis of SCC in the oral cavity from 1985 to 2017 were gathered. The cases diagnosed in the categories C00, C02 to C06 (C00 lip, C02 other unspecified parts of the tongue, C03 gingiva, C04 floor of the mouth, C05 palate and C06 other unspecified parts of the mouth) of the International Classification of Diseases – Oncology (ICD-O)¹⁸ were included.

The minimum age to join the study – 18 years-old – was determined according to the definition of adolescent adopted by the Child and Adolescent Statute (ECA)¹⁹ and the upper limit of 40 years-old because it falls in the profile of high prevalence of the disease.

The variables of this study are related to the sociodemographic characteristics (age, sex, race/color, region of residence, education and marital status), risk factors (occupation, tobacco and alcohol use, and family history), clinical characteristics (tumor site and initial staging according to Union for International Cancer Control (UICC) called the TNM Classification of Malignant Tumors)²⁰ and to the case status with information about death.

Initially, the continuous variable was described as mean and standard deviation and the categorical variables as absolute and relative frequency. Next, the bivariate analysis to identify the associations with death and the variables categorized through the chi-square test with level of significance of 5%. The prevalence ratios (PR) and respective confidence intervals (95%) were calculated.

The binary logistic regression was utilized as statistic model allowing to estimate the probability of a given categorical outcome as a function of one or more predictors. Dummy variables to locate the cancer and covariables for advanced staging, alcohol, tobacco and age were introduced in the multivariate analysis. The selection of the covariables for the initial model was based in the findings of the stratified analysis and theoretical criteria. All the analyzes were performed with the Statistical Package for the Social Sciences (SPSS), version 22.0

(SPSS Inc., ChiCad. USA) and Stata 14.0 for Windows (Statsoft Inc.).

For the analysis, the variable age was initially manipulated as continuous variable and next, categorized for all the other analyzes. To group the occupations, literature-based evidences were reviewed to detect the professions with high exposure to carcinogenic substances in the workplace, the category “Other” gathered all the other professions which do not present occupational risk for oral cavity cancer.

The information utilized in this study are in public domain, unidentified, available at the website of the National Cancer Institute José Alencar Gomes da Silva (INCA); no data was obtained directly from any of the participants, reason for which the IRB – Institutional Review Board approval was waived.

RESULTS

From 1985 to 2017, 78,513 oral cavity cancer cases were registered at *Integrador RHC*¹⁷, being 4.7% (3,683) in 19-40 years old individuals. Pursuant to the eligibility criteria, 1,126 registers were excluded due to histological types different from SCC and 796 for failing to present histopathological confirmation for this neoplasm. Eventually, the final study sample consisted of 1,761 cases.

The mean age of the sample was 33.3 (±6.3) years, with great number of cases in the age range of 31≥40 years (79.80%), mostly males (71.90%), White (50.20%), and complete or incomplete elementary school (63.40%). 58.00% did not have spouses as shown in Table 1.

The same Table shows that among young adults diagnosed with oral SCC the main functions identified for risk exposure were agriculture and aquaculture workers (18.50%) and the category “other” concentrated most of the cases. The majority were smokers (61.60%) and alcohol users (56.70%) without family history of cancer (59.30%).

The chi-square test showed that the variables sex (p=0.000), race (p=0.000), marital status (p=0.002), alcohol (p=0.000) and tobacco use (p=0.000) presented statistically significant association (p<0.05) with death (Table 1). Figure 1 shows great concentration of cases in the Southeast (3640%) and Northeast regions (33.50%).

Table 2 presents the distribution of the population according to the clinical characteristics of the neoplasm and reveals that for most of the cases, the primary tumor was diagnosed in the tongue (42.40%), at advanced staging (68.10%) and the statistical significance for death for these variables was p=0.000. 25.50% of the case status evolved to death.

Table 1. Sociodemographic characteristics and risk factors according to RHC in Brazil, 1985-2017

Variables	(n)	(%)	p-value ^a
Age (n=1,761)			
≥20 years	21	1.20	
21≥30 years	335	19.00	0.008
31≥40 years	1.405	79.80	
Sex (n=1,761)			
Male	1.266	71.90	0.000
Female	495	28.10	
Race/Color (n=1,614)^b			
Whites	810	50.20	0.000
Non-Whites	804	49.80	
Education (n=1,329)^c			
Illiterate	104	7.80	
Elementary	843	63.40	0.018
High-school	278	21.00	
University	104	7.80	
Marital status (n=1,598)^d			
Without spouse	927	58.00	0.002
With spouse	671	42.00	
Occupation (n=1,487)^e			
Agriculture/Aquaculture	275	18.50	
Civil construction	166	11.20	
General services	162	10.90	0.014
Students	97	6.50	
Commerce	91	6.10	
Mechanic/Mining	51	3.40	
Other	349	23.50	
Unlisted in CBO ^f	296	19.90	
Tobacco use (n=1,259)^g			
Yes	776	61.60	0.000
Never	483	38.40	
Alcohol use (n=1,197)^h			
Yes	679	56.70	0.000
Never	518	43.30	
Family history (n=856)ⁱ			
Yes	348	40.70	0.614
No	508	59.30	

Source: *Integrador RHC*¹⁷.

Captions: ^aChi-square test for relation with death; ^b147 missed information; ^c432 missed information; ^d163 missed information; ^e274 missed information; ^fBrazilian Catalogue of Labor Functions (CBO); ^g502 missed information; ^h564 missed information; ⁱ905 missed information.



Figure 1. Distribution of the cases per Region of residence according to RHC in Brazil, 1985-2017

Captions: Midwest (3.40); North (5.50); South (21.20); Northeast (33.50); Southeast (36.40).

Prevalence Ratio (PR) presented in Table 3 shows that the prevalence of death in smokers and alcohol users was respectively 1.613 (CI95% 1.316-1.977) and=1.611 (CI95% 1.329-1.967) times greater than for non-smokers and non-alcohol users. The cases in the tongue evolved to death with PR=2.638 (CI95% 2.050-3.394) times greater than those in the lip. Similarly, the advanced staging cases in comparison with the initial showed a PR=3.566 (CI95% 2.570-4.950) times greater for death.

When the association between death and cancer in the tongue was adjusted by the age, other sites, advanced staging, alcohol and tobacco use, the odds ratio for death increased to 7.832 (CI95%: 2.625-23.374, $p<0.0001$), the variable advanced staging continued significant OR=4.171 (CI95% 2.580-6.744, $p<0.0001$) according to Table 4.

DISCUSSION

The epidemiological profile of individuals with SCC in the oral cavity in the Brazilian population is widely discussed and already acknowledged in the literature. Nevertheless, for young adults, the matter is yet open. The present study attempted to investigate the epidemiological profile and oral cavity cancer-related factors in Brazilian young adults and the relation with death from 1985 to 2017.

Of the 1,761 eligible cases according to the sociodemographic aspects analyzed, 71.90% occurred with males and 28.10% with females, mostly oral cavity

Table 2. Location of the tumor and status of the cases according to RHC in Brazil, 1985-2017

Variables	n	%	p-value ^a
Primary tumor site			
(n=1,761)			
C00 Lip	321	18.20	
C02 Tongue	747	42.40	
C03 Gingiva	46	2.60	0.000
C04 Floor of the mouth	198	11.30	
C05 Palate	197	11.20	
C06 Other parts of the mouth	252	14.30	
T (n=1.009)^b			
T1	195	19.30	
T2	239	23.70	
T3	211	20.90	
T4	364	36.10	
N (n=1.001)^c			
N0	513	51.20	
N1	164	16.40	
N2	209	20.90	
N3	115	11.50	
M (n=931)^d			
M0	903	97.00	
M1	28	3.00	
Staging (n=1.052)^e			
<i>In situ</i>	1	0.10	
I	165	15.70	
II	170	16.10	0.000
III	225	21.40	
IV	491	46.70	
Case status			
Death	449	25.50	
Alive	1.312	74.50	

Source: Integrador RHC¹⁷.

Caption: ^aChi-square test for relation with death; ^b752 missed information; ^c760 missed information; ^d830 missed information; ^e709 missed information.

cancer in young adults in the age range of 31≥40 years (79.80%). Different studies affirm that for the population in general, males present oral cavity SCC at the most because of innumerous risk factors and neglect with their own health^{5,10}. The results that Gamez et al.²¹ encountered in a retrospective study with 124 individuals younger than 40 years in USA are similar to the present study where most of the cases were males and the most frequent age range was around 35 years.

Table 3. Prevalence ratio among sociodemographic variables, risk factors, tumor site and staging with death by SCC in Brazil, 1985-2017

Variables	Death					
	Yes		No		PR ^a	CI95% ^b
	n	%	n	%		
Age (n=1,761)						
32-39	367	27.3	977	72.7	Ref.	
26-31	54	18.1	245	81.9	1.704	1.155-1.769
25 or less	28	23.7	90	76.3	1.207	0.836-1.561
Sex (n=1,761)						
Male	352	27.8	914	72.2	Ref.	
Female	97	19.6	398	80.4	1.419	1.162-1.732
Race/Color (n=1,614)^c						
White	172	21.2	638	78.8	Ref.	
Non-White	252	31.3	552	68.7	1.476	1.248-1.745
Region of residence (n=1,748)^d						
Southeast	198	31.1	438	68.9	Ref.	
North	26	27.1	70	72.9	1.151	0.815-1.625
Northeast	154	26.3	432	73.7	1.185	0.991-1.414
Midwest	10	16.7	50	83.3	1.698	1.078-2.672
South	59	15.9	311	84.1	1.747	1.417-2.153
Education (n=1,329)^e						
Illiterate	34	32.7	70	67.3	Ref.	
Elementary	242	28.7	601	71.3	1.130	0.850-1.501
High-school	59	21.2	219	78.8	1.428	1.055-1.932
University	21	20.2	83	79.8	1.476	1.013-2.149
Marital Status (n=1,598)^f						
Without spouse	272	29,3	655	70,7	Ref.	
With spouse	152	22,2	534	77,8	1,324	1,115-1,573
Occupation (n=1,487)^g						
Agriculture/Aquaculture	72	26.2	203	73.8	Ref.	
Civil construction	63	38.0	103	62.0	0.652	0.471-0.901
General services	43	26.5	119	73.5	0.986	0.712-1.366
Students	25	25.8	72	74.2	1.016	0.688-1.498
Commerce	25	27.5	66	72.5	0.952	0.640-1.416
Mechanic/Mining	18	35.3	33	64.7	0.716	0.437-1.171
Other	79	22.6	270	77.4	1.148	0.881-1.495
Unlisted in CBO ^h	69	23.3	227	76.7	1.118	0.849-1.472
Tobacco use (n=1,259)ⁱ						
Yes	254	32.7	522	67.3	Ref.	
Never	98	20.3	385	79.7	1.613	1.316-1.977

to be continued

Table 3. continuation

Variables	Death				PR ^a	CI95% ^b
	Yes		No			
	n	%	n	%		
Alcohol use (n=1,197)ⁱ						
Yes	226	33.3	453	66.7	Ref.	
Never	107	20.7	411	79.3	1.611	1.329-1.967
Family History (n=856)^k						
Yes	100	28.7	248	71.3		
No	138	27.2	370	72.8	1.058	0.850-1.316
Site of the primary tumor (n=1,761)						
C02 Tongue	213	28.5	534	71.5	Ref.	
C00 Lip	16	5.0	305	95.0	2.638	2.050-3.394
C03 Gingiva	14	30.4	32	69.9	0.935	0.585-1.495
C04 Floor of the mouth	61	30.8	137	69.2	0.923	0.720-1.182
C05 Palate	56	28.4	141	71.6	1.003	0.782-1.286
C06 Other parts of the mouth	89	35.3	163	64.7	0.791	0.631-0.992
Staging (n=1,052)^l						
Advanced (T3 and T4)	266	37.2	450	62.8	Ref.	
Initial (T0, T1 and T2)	35	10.4	301	89.6	3.566	2.570-4.950

Source: Integrador RHC⁷.

Captions: ^aPrevalence ratio; ^bConfidence Interval 95%; ^c147 missed information; ^d13 missed information; ^e432 missed information; ^f163 missed information; ^g274 missed information; ^hBrazilian Catalogue of Labor Functions(CBO); ⁱ502 missed information; ^j564 missed information; ^k905 missed information; ^l709 missed information; Ref. = reference.

Table 4. Adjusted model for association of death by SCC in the tongue in Brazil

Variables	p=	OR ^a	CI95% ^b
Tongue	0.000	7.832	2.625-23.374
Gingiva	0.387	0.630	0.221-1.797
Floor	0.170	1.487	0.843-2.620
Palate	0.182	1.514	0.823-2.785
Advanced stage	0.000	4.171	2.580-6.744
Alcohol	0.396	0.834	0.547-1.269
Tobacco	0.209	0.745	0.470-1.180
Age	0.916	0.998	0.959-1.039

Source: Integrador RHC⁷.

Captions: ^aOdds ratio adjusted for other anatomic sites, advanced staging, alcohol and tobacco use and age; ^bConfidence Interval 95%.

Repeated and excessive exposure to sun rays increases the risk of oral cavity cancer, especially in the lips of individuals with fair skin^{10,22} because they are more propense to suffer radiation effects compared with black skin individuals^{23,24}. In addition, worker's occupational exposure to carcinogenic agents increases this risk^{25,26} and most of the records were identified as white color/race, in agriculture and aquaculture activities that the

literature confirms as risk professions for cancer^{27,28}. While investigating younger than 40-years old adults diagnosed with SCC in Brazil, Costa et al.¹¹, corroborate these findings and concluded that 76% (p=0.493) were Whites. Pukkala et al.²⁸ in a study developed in Finland noticed that 2.7 of the fishermen (CI 95%: 1.3-5.0), 1.8 of the farmers (CI 95%: 1.2-2.6) and other outside workers had more odds of developing this neoplasm.

The analysis of the geographical distribution of SCC among Brazilian's five regions revealed that the Southeast and Northeast presented the greatest percentage of cases of oral cavity, similar to the estimates for each year of the triennium 2020-2022, period when it is expected that these regions gather 73% of new cases². These results might possibly be related to the greatest population found in the Southeast and Northeast regions, respectively 40.8% and 27.1%, in addition to more possibilities of oncologic treatment²⁹ and better register of cases³⁰.

Education, income and occupation are the bases to estimate the socioeconomic status of the individuals; as revealed by the present study, the low level of education was predominant³¹. Al-Dakkak³² in concurrence with these findings, noticed that individuals living in underserved areas, with poor health literacy about oral cavity cancer and unemployed had significantly greater risk of developing the disease. Other authors found strong association of oral cavity malignant neoplasms with low socioeconomic status also connected to reduced number of health services and higher mortality^{6,25}.

Most of the young adults investigated had no spouse when admitted at the hospital, possibly due to their age and because, in general, the marital union happens later nowadays. These findings concur with Bundgaard et al.³³ in a case-control study for the general population in Denmark where two-fold higher risk of developing SCC in the oral cavity was found in divorced (OR=2.3; CI95% 1.1-4.6) even after adjusted for tobacco and alcohol use.

The impact of tobacco and alcohol use for the development of oral cavity SCC, although well established for older than 40-years, has different association profile for young adults^{4,11}. For some authors, the first contact with tobacco typically occurs in the adolescence when most of the adult smokers already smoked when they were 18-years old^{34,35}. Most of the young adults investigated in this study were smokers, similar to the results found by Frare et al.³⁶ in a study developed in Brazil with the same population when they noticed that the majority smoked and used alcohol, but without statistical significance. For Miller et al.⁸ the factors associated with worse outcomes for young adults are similar to the known predictors for older individuals.

It was noticed that 40.70% of the cases investigated had family history of cancer, in contrast with the findings of Beena et al.³⁷ who encountered a significant correlation ($p < 0.0001$) between oral cavity SCC in young adults and family history of malignant neoplasm when compared to older patients. In addition, Verschuur et al.³⁸ concluded that the information about family history investigated in several studies had some sort of fragility because this

data is quite often missed in medical charts. However, even with the efforts of SisRHC to analyze the validity and inconsistency of the information^{13,39}, the problems related to the quality and completeness of the register can compromise the result of the analyzes⁴⁰.

Similar to other national information systems, the data collected by SisRHC ensure access to clinical information of the individual which in conjunction with the existence of RHC in all Brazilian states form a database about cancer and help to monitor the health status and certain pathologies presented by the population¹³. With the support from INCA and the consolidation of data collecting initiatives at the hospitals, SisRHC is currently acknowledged as a continuous system of information¹³; some studies affirm it is an important tool that government and health services managers can rely upon to evaluate, take decisions, plan health-related actions, control and treat cancer in Brazil^{39,40}.

Tongue was the site most affected in Brazilian young adults in concurrence with most of the epidemiological studies^{11,21,36,41}. It was detected that 68.10% of the individuals were diagnosed at advanced stages of the disease according to TNM (classification of the neoplasm according to clinical characteristics of extension, regional spread and metastasis). Zhang et al.⁹ reached similar results when investigated young adults with oral cavity SCC, concluding that half of the individuals were at advanced stages of the disease, while other studies indicate that the progress of the disease can be related to late diagnosis resulting in long periods of treatment and poor prognosis^{9,11}.

Within a general perspective, the present study found that little more than 25% of young adults evolved to death with odds ratio increased to 7.832 (CI95%: 2.625-23.374, $p < 0.0001$), when the main association between death and cancer in the tongue was adjusted by the age, other sites, advanced staging, alcohol and tobacco use. This information highlights the differences of prognosis detected, depending on the site of the primary tumor: patients diagnosed with SCC in the tongue and floor of the mouth have lower survival when compared with other sites of the oral cavity^{8,36}. Kelner et al.⁴² affirm that nearly 30% to 40% of the neoplasms in these sites develop regional metastases which impact the prognosis.

In 2017, 8,126 deaths by oral cavity cancer occurred in Brazil of which 452 cases (56%) in individuals with up to 44 years-old, mostly living in the Southeast and Northeast regions⁴³. Some studies which evaluated the survivorship of young adults with oral cavity cancer revealed that carcinogenic habits were not significantly associated with it^{44,45}. For other studies, SCC survival rates are similar for younger and older adults⁴¹.

The utilization of secondary data obtained from clinical charts with probable missed information, further to issues related to completing the data or structural obstacles in maintaining the RHC are the limitations of this study⁴⁶. In addition, the identification of death found at the database does not inform the cause and deaths may have occurred during the first oncologic treatment or for other reasons, which may compromise the quality of the data collected with biases that will impact the analysis of the data⁴⁰. It is important to make health professionals aware that completing and filling data in a legible way in the charts correctly is essential for better understanding of the medical history and future studies.

CONCLUSION

The present study concluded that the epidemiological profile of Brazilian young adults diagnosed with oral cavity SCC is similar to the general population. The findings can contribute to understand the factors associated with mortality by oral cancer and help to elaborate and intensify the public policies of prevention, diagnosis and treatment of this population to reduce the incidence and lethality of this public health problem. In addition, it is important that new studies are conducted to investigate better the factors related to the development of this tumor in this group of individuals.

CONTRIBUTIONS

Lidiane de Jesus Lisboa, Marília de Matos Amorim and Valéria Souza Freitas contributed to the study conception and/or design, acquisition, analysis and interpretation of the data, wording and critical review. Alessandra Laís Pinho Valente Pires, Ana Carla Barbosa de Oliveira and Rodrigo Tripodi Calumby contributed to the acquisition, analysis and interpretation of the data, wording and critical review. They all approved the final version to be published.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interests to declare.

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