

# Clinical-epidemiological Profile of Individuals with Oral Cancer Treated at a Reference Center in the Semi-arid Region of Bahia

<https://doi.org/10.32635/2176-9745.RBC.2026v72n3.5634EN>

*Perfil Clínico-epidemiológico dos Indivíduos com Câncer de Boca Atendidos em um Centro de Referência do Semiárido Baiano*  
Perfil Clínico-epidemiológico de Individuos con Cáncer Bucal Atendidos en un Centro de Referencia del Semiárido de Bahía

Michelle Miranda Lopes Falcão<sup>1</sup>; Thomas Silva Gonçalves<sup>2</sup>; Serena de Oliveira Guimarães Passos<sup>3</sup>; Jaqueline de Souza da Cruz Coelho<sup>4</sup>; Wenderson Santana Souza<sup>5</sup>; Wlisses Freitas Silva<sup>6</sup>; Valéria Souza Freitas<sup>7</sup>; Tarsila de Carvalho Freitas Ramos<sup>8</sup>; Márcio Campos Oliveira<sup>9</sup>

## ABSTRACT

**Introduction:** Squamous cell carcinoma (SCC) is the most common oral malignancy, frequently associated with chronic exposure to ultraviolet radiation. It can invade tissues locally and presents a risk of metastasis. **Objective:** To analyze the clinical and demographic profile of individuals diagnosed with squamous cell carcinoma (SCC) treated at the “Centro de Referência de Lesões Labiais” (CRLB) of the “Universidade Estadual de Feira de Santana (Uefs), between 2008 and 2024. **Method:** This is a cross-sectional, descriptive study based on the analysis of secondary data from physical medical records. All cases with a confirmed histopathological diagnosis of SCC were included, totaling 244 individuals. The variables analyzed included sociodemographic characteristics, lifestyle habits, and clinical aspects of the lesions. Data were analyzed using descriptive statistics (absolute and relative frequencies), utilizing IBM SPSS Statistics software, version 23.0. **Results:** A predominance of men (70.9%; n=173), aged 40 years or older (97.1%; n=237), with occupational sun exposure (73.6%; n=109), tobacco use (68.5%; n=165), and alcohol use (57.7%; n=139) was observed. Most presented lesions larger than 1 cm (98.8%; n=163), lasting longer than 30 days (77.8%; n=140), presenting red coloration (63.0%; n=114), and exophytic growth (61.0%; n=100). Only 9.8% (n=24) of the cases were diagnosed *in situ*. **Conclusion:** The findings highlight clinical patterns and exposure factors potentially related to oral cancer and also indicate a possible delay in diagnosis. The importance of educational initiatives, training of primary care professionals, and decentralization of specialized services is highlighted as key strategies to improve the management of squamous cell carcinoma (SCC) in the region.

**Key words:** Mouth; Neoplasms; Squamous Cell Carcinoma of Head and Neck; Epidemiology, Descriptive; Cross-Sectional Studies.

## RESUMO

**Introdução:** O carcinoma de células escamosas (CCE) é a neoplasia maligna oral mais comum, frequentemente associado à exposição crônica à radiação ultravioleta. Pode invadir os tecidos localmente e apresentar risco de metástase. **Objetivo:** Analisar o perfil clínico e demográfico dos indivíduos diagnosticados com CCE atendidos no Centro de Referência de Lesões Bucais (CRLB) da Universidade Estadual de Feira de Santana (Uefs), entre 2008 e 2024. **Método:** Estudo do tipo transversal, descritivo, baseado na análise de dados secundários provenientes de prontuários físicos. Foram incluídos todos os casos com diagnóstico histopatológico confirmado de CCE, totalizando 244 indivíduos. As variáveis analisadas abrangeram características sociodemográficas, hábitos de vida e aspectos clínicos das lesões. Os dados foram analisados por meio de estatística descritiva (frequências absolutas e relativas), utilizando o *software* IBM SPSS Statistics, versão 23.0. **Resultados:** Observou-se predominância de homens (70,9%; n=173), com idade igual ou superior a 40 anos (97,1%; n=237), exposição solar ocupacional (73,6%; n=109), uso de tabaco (68,5%; n=165) e álcool (57,7%; n=139). A maioria apresentava lesões com mais de 1 cm (98,8%; n=163), duração superior a 30 dias (77,8%; n=140), coloração vermelha (63,0%; n=114) e crescimento exofítico (61,0%; n=100). Apenas 9,8% (n=24) dos casos foram diagnosticados na forma *in situ*. **Conclusão:** Os achados evidenciam padrões clínicos e de exposição a fatores potencialmente relacionados ao câncer bucal, além de indicar possível retardo no diagnóstico. Ressalta-se a importância de ações educativas, capacitação da atenção básica e descentralização dos serviços especializados como estratégias para qualificar o enfrentamento ao CCE na Região.

**Palavras-chave:** Neoplasias Bucais; Carcinoma de Células Escamosas de Cabeça e Pescoço; Epidemiologia Descritiva; Estudos Transversais.

## RESUMEN

**Introducción:** El carcinoma de células escamosas (CCE) es la neoplasia maligna oral más común, frecuentemente asociada a la exposición crónica a la radiación ultravioleta. Puede invadir los tejidos localmente y presentar riesgo de metástasis. **Objetivo:** Analizar el perfil clínico y demográfico de los individuos diagnosticados con carcinoma de células escamosas (CCE) tratados en el Centro de Referencia de Lesiones Bucales (CRLB) de la Universidad Estatal de Feira de Santana (Uefs), entre 2008 y 2024. **Método:** Estudio descriptivo transversal, basado en el análisis de datos secundarios de historias clínicas físicas. Se incluyeron todos los casos con diagnóstico histopatológico confirmado de CCE, totalizando 244 individuos. Las variables analizadas incluyeron características sociodemográficas, hábitos de vida y aspectos clínicos de las lesiones. Los datos se analizaron mediante estadística descriptiva (frecuencias absolutas y relativas), utilizando el *software* IBM SPSS Statistics, versión 23.0. **Resultados:** Se observó un predominio de hombres (70,9%; n=173), de 40 años o más (97,1%; n=237), con exposición solar ocupacional (73,6%; n=109), consumo de tabaco (68,5%; n=165) y consumo de alcohol (57,7%; n=139). La mayoría presentó lesiones mayores de 1 cm (98,8%; n=163), con una duración mayor a 30 días (77,8%; n=140), coloración roja (63,0%; n=114) y crecimiento exofítico (61,0%; n=100). Solo el 9,8% (n=24) de los casos se diagnosticó *in situ*. **Conclusión:** Los hallazgos resaltan patrones clínicos y de exposición a factores potencialmente relacionados con el cáncer oral, y también indican un posible retraso en el diagnóstico. Se destaca la importancia de las iniciativas educativas, la capacitación del personal de atención primaria y la descentralización de los servicios especializados como estrategias para mejorar el manejo del CCE en la región.

**Palabras clave:** Neoplasias Bucales; Carcinoma de Células Escamosas de Cabeza y Cuello; Epidemiología Descriptiva; Estudios Transversales.

<sup>1,5,6,9</sup>Universidade Estadual de Feira de Santana (Uefs), Departamento de Saúde. Feira de Santana (BA), Brasil. E-mails: mmlfalcao@uefs.br; wenderson.santana2011@gmail.com; wlisses-2010@hotmail.com; vfreitas@uefs.br; tcfamos@uefs.br; mcoliveira@uefs.br. Orcid id: <https://orcid.org/0000-0002-0929-2324>; Orcid id: <https://orcid.org/0000-0003-1263-3537>; Orcid id: <https://orcid.org/0009-0006-8538-047X>; Orcid id: <https://orcid.org/0000-0002-7259-4827>; Orcid id: <https://orcid.org/0000-0002-6767-4662>; Orcid id: <https://orcid.org/0000-0002-1913-0417>

<sup>2</sup>Universidade Federal de Pelotas (UFPEL), Residência em Atenção em Oncologia. Pelotas (RS), Brasil. E-mail: thomassigoncalves@gmail.com. Orcid id: <https://orcid.org/0009-0001-3394-7458>

<sup>3,4</sup>Universidade Estadual de Campinas (Unicamp), Faculdade de Odontologia de Piracicaba. Piracicaba (SP), Brasil. E-mail: serenadeog@gmail.com; j251588@dac.unicamp.br. Orcid id: <https://orcid.org/0009-0006-6236-5656>; Orcid id: <https://orcid.org/0009-0002-7301-0616>

**Corresponding author:** Michelle Miranda Lopes Falcão. Uefs, Departamento de Saúde. Avenida Transnordestina, s/n – Novo Horizonte. Feira de Santana (BA), Brasil. CEP 44036-900. E-mail: mmlfalcao@uefs.br



## INTRODUCTION

Oral cancer is a public health problem with relevant clinical, social and economic implications, especially in developing countries<sup>1</sup>. Squamous cell carcinoma (SCC) is the most frequent histological subtype among the malignant tumors affecting head and neck, accounting for 90% of the cases in the oral cavity and oropharynx<sup>2</sup>. Its elevated incidence is directly related to exposure to avoidable risk factors as smoking, alcohol abuse, chronic sun exposure and more recently, infection by the human papilloma virus (HPV), the latter to oropharynx SCC<sup>2,3</sup>.

According to the National Cancer Institute (INCA), 17,190 new cases of cancer in the oral cavity are estimated annually for the triennium 2026-2028, placing this neoplasm among the seven most incident in the country, except non-melanoma skin cancer<sup>4</sup>. In Bahia, the scenario is equally concerning: oral cancer is ranked third among men and seventh among women with rates that reflect regional disparities and inequalities of access to diagnosis<sup>4</sup>.

Despite the acknowledged association with occupational and behavioral risk factors<sup>5-7</sup>, there is an important gap in the knowledge of countryside and semiarid regions where the socioeconomic conditions and structure of health services directly impact early diagnosis and access to treatment. National studies indicate that most of the cases is diagnosed at advanced stages which worsen the prognosis and overload the health systems<sup>6,8,9</sup>.

Understand the clinical and epidemiological profile of individuals diagnosed with SCC is essential for the formulation of strategies to cope with the disease in SUS, the National Health System. Local investigations based on specialized services can reveal specific pattern still little documented in the literature with potential to guide more effective public policies. The “*Centro de Referência de Lesões Bucais (CRLB)*” of “*Universidade Estadual de Feira de Santana (Uefs)*” is a specialized attention service of stomatology and oral pathology in Bahia semiarid for diagnosis, follow-up and formation in health. Although not formally assigned as a regional reference center, CRLB in practice is consolidated as an important hub of diagnostic support for oral cancer receiving patients from Feira de Santana and other municipalities of the state.

The objective of the present study is to analyze the clinical and epidemiologic profile of the patients with SCC treated at CRLB/Uefs between 2008 and 2024, contributing for the qualification of oral health, strengthening of primary attention and improvement of actions of prevention and early diagnosis of the disease.

## METHOD

Cross-sectional, descriptive, quantitative study developed from the analysis of secondary data obtained from physical charts of individuals diagnosed with SCC in CRLB of Uefs between 2008 and 2024.

CRLB is a specialized attention service under the purview of “*Núcleo de Câncer Oral (NUCAO)*” for diagnosis, follow-up and management of oral lesions further to developing activities of academic graduation and extension targeted to prevention and early diagnosis of oral cancer. The service is not formally assigned as reference center and does not hold any institutional agreement with the municipalities; however, due to the limited offer of public network specialized services, it is a regular referral from other cities of the state.

Charts with confirmed histopathology of SCC and complete sociodemographic, clinic and diagnostic data have been included. Those where the informed consent form (ICF) was not signed, cases with diagnostic and treatment performed out of CRLB/Uefs, and registers related to relapses with incomplete data of the primary episode were excluded. It has been decided to analyze the census of all the cases registered in the period of interest that met the eligibility criteria, reason for which a sample was not calculated.

Two trained investigators collected the data through an 88-item standardized and semi-structured form. For this study, 22 variables have been analyzed, based on their clinical relevance and availability in the registers. The information were extracted independently and later validated by a third rater in case of discrepancies. The data were exported to a Microsoft Excel® (Microsoft Corporation, Redmond, WA) cross-validation electronic spreadsheet to minimize typos and inconsistencies.

The calibration of the raters was based on the analysis of ten charts selected randomly. Each investigator filled in the form in two different moments with time interval between them which allowed to evaluate the intra- and inter-rater concordance. Cohen's Kappa was used to measure the inter-rater reliability for the categorical variables collected. The values obtained were 0.9 both for intra- and inter-rater concordance, considered of excellent concordance according to the classification of Landis and Koch<sup>10</sup>.

The variables analyzed were grouped in three main categories: sociodemographic characteristics (sex, age-range, color/ethnicity, marital status, occupation and city of origin), lifestyle (smoking, alcohol abuse and use of sun blockers) and clinical characteristics of the lesion (anatomic location, type, color, size, depth, time of evolution, presence of lymphadenopathy, among others).

The histopathological type of the lesion was evaluated too.

The software IBM SPSS<sup>11</sup> Statistics, version 23.0 (IBM Corp., Armonk, NY) was utilized for the statistical analysis. The variables were described as relative and absolute frequencies. The study is linked to the project “*Estudo Clínico-Patológico das Lesões Orais Identificadas em Unidades de Referência de Universidades Públicas Baianas*”, approved by the Ethics Committee of Uefs, report number 087/2008 (CAAE (submission for ethical review): 0086.059.000-08) in compliance with Directive 466/2012 of the National Health Council<sup>12</sup>.

## RESULTS

From 2008 to 2024, 244 cases of SCC in the CRLB have been identified. The sociodemographic analysis revealed that most of the patients were males (70.9%; n=173), aged 40 years or older (97.1%; n=237), with mean age of 61.29 (min.= 34; max.=96). Among the 194 patients with registered information, 39.2% (n=76) claimed they were Black; there was predominance of married individuals (40.2%; n=94) among the 234 with available data as can be seen in Table 1.

68.5% (n=165/243) of the individuals utilized tobacco related products, while 57.7% (n=139/241) claimed they consumed alcoholic beverages as lifestyle depicted in Table 2. Only 44.4% (n=55/124) reported the use of sun blockers to protect from sun exposure, reflecting an additional risk factor among individuals with occupations subjected to ultraviolet radiation.

Most of the cases were classified as squamous cell carcinoma in relation to histopathology (Table 3) in several grades of differentiation, the type moderately differentiated was prevalent in 24.2% of the cases (n=59). Only 9.8% (n=24) of the lesions were diagnosed *in situ*, indicating low early detection.

51.1% of solid lesions (n=92/180) were among the fundamental lesions (n=180), and lymphadenopathy (n=243) was observed in 35.5% (n=72/203) of the individuals. The other clinical manifestations are shown in Table 4 where there was predominance of solid lesions (51.1%; n=92/180) with red color (63.0%; n=114/181) and exophytic growth pattern (61.0%; n=100/164). The size of 20.6% of the lesions (n=34/165) was larger than four centimeters, corresponding to tumors classified as T3 according to TNM. The duration of the lesion, when registered, was over 15 days in 93.9% of the cases (n=140/180), indicating prolonged time since the onset of the lesion and search for specialized treatment. Tongue was the most affected anatomic location (34.4%; n=66/192).

The variation of the number of observations per variable results from the lack of complete registers, a

**Table 1.** Distribution of individuals diagnosed with squamous cell carcinoma according to demographic variables in the CRLB from 2008 to 2024

Sociodemographic variables	n	%
<b>Biologic sex (n=244)</b>		
Female	71	29.1
Male	173	70.9
<b>Age range (n=244)</b>		
<40 years	07	2.9
≥ 40 years	237	97.1
<b>Skin color (n=194)</b>		
White	43	22.2
Black	76	39.2
Brown	73	37.6
Yellow	02	1.0
<b>Marital status (n=234)</b>		
Single	89	38.0
Married	94	40.2
Separated/divorced	12	5.1
Widow/er	39	16.7
<b>Occupation (n=148)</b>		
Direct sun exposure	109	73.6
No direct sun exposure	39	26.4
<b>City of origin (n=207)</b>		
Feira de Santana	84	40.6
Ipirá	10	4.8
Santo Estevão	06	2.9
Riachão do Jacuípe	05	2.4
Pé de Serra	05	2.4
Others*	97	46.9

**Captions:** \*Others: Conceição do Coité (n=1); Terra Nova (n=1); Tiquaruçu (n=1); São José do Jacuípe (n=1); Rafael jambeiro (n=1); Santa Luz (n=1); Ouriçangas (n=1); Ribeira do Pombal (n=1); Iaçú (n=1); Lamarão (n=1); Cipó (n=1); Jaguará (n=1); Luís Eduardo Magalhães (n=1); Queimadas (n=1); Jiquiriçá (n=1); Serra Talhada (n=1); Itaberaba (n=1); Ichu (n=1); Alagoinhas (n=1); Nova Itarana (n=1); Várzea do Poço (n=1); Uauá (n=1); Amélia Rodrigues (n=2); Candeal (n=2); Euclides da Cunha (n=2); Lençóis (n=2); Santo Amaro (n=2); Ipuacu (n=2); Santa Terezinha (n=2); Ruy Barbosa (n=2); Bonfim de Feira (n=2); Tanquinho (n=2); Pintadas (n=2); Nova Fátima (n=2); Serrinha (n=3); Conceição do Jacuípe (n=3); Coração de Maria (n=3); Araci (n=3); São Gonçalo dos Campos (n=3); Água Fria (n=3); Irará (n=3); Anguera (n=3); Teofilândia (n=3); Cachoeira (n=3); Conceição da Feira (n=4); Humildes (n=4); Santa Bárbara (n=4); Santanópolis (n=4) and Serra Preta (n=4).

limitation frequently observed in secondary data-based retrospective studies.

## DISCUSSION

The findings of this study, based in the analysis of 244 cases of SCC registered in CRLB of Uefs, corroborate



**Table 2.** Distribution of lifestyles observed in the charts of individuals diagnosed with squamous cell carcinoma in the CRLB from 2008 to 2024

Variables of lifestyles	n	%
<b>Smoking (n=243)</b>		
Yes	165	68.5
No	76	31.5
<b>Alcohol use (n=241)</b>		
Yes	139	57.7
No	102	42.3
<b>Sun blockers (n=124)</b>		
Yes	55	44.4
No	69	55.6

**Table 3.** Distribution of the histological classification presented in the charts of individuals diagnosed with squamous cell carcinoma in the CRLB from 2008 to 2024

Variables of diagnosis	n	%
<b>Histopathological type (n=244)</b>		
Squamous cell carcinoma	103	42.2
Well-differentiated squamous cell carcinoma	46	18,9
Moderately differentiated squamous cell carcinoma	59	24.2
Little differentiated squamous cell carcinoma	11	4.5
<i>Carcinoma in situ</i>	24	9.8
Papillary squamous cell carcinoma	1	0.4

previous evidences of the literature about the epidemiologic profile of this neoplasm, and provide invaluable material to design prevention and early detection strategies in the context of Bahia's *Semiárido*. Regional analyzes are essential to improve oral health surveillance, considering that local cultural, socioeconomic and structural aspects directly influence the pattern of exposure to risk factors and access to healthcare<sup>2,6</sup>.

Piemonte et al.<sup>7</sup> highlighted that risk factors of SCC present heterogeneous distribution in different geographical contexts. The characterization of the profile of the patients treated in the CRLB reveals specificities where social disparities and limited specialized assistance coverage are structural challenges.

The predominance of cases in 40-year old or older men as the present investigation revealed, is consistent with the literature and can be related to high exposure of this group to smoking and alcohol use<sup>8</sup>. However, the increase of the incidence in women can reflect changes

**Table 4.** Distribution of the clinical characteristics observed in the lesions diagnosed as squamous cell carcinoma in the CRLB from 2008 to 2024

Clinical Variable	n	%
<b>Color of the lesion (n=181)</b>		
White	40	22.1
Red	114	63.0
Black	7	3.9
Normochromic*	20	11.0
<b>Growth (n=164)</b>		
Endophytic	64	39.0
Exophytic	100	61.0
<b>Size of the lesion (n=165)</b>		
≤2 cm	71	43
> 2 cm and ≤4 cm	60	36.4
>4 cm	34	20.6
<b>Depth of the lesion (n=189)</b>		
Superficial	83	43.9
Submucosa	94	49.7
Intraosseal	12	5.8
<b>Consistency of the lesion (n=176)</b>		
Hard	84	47.7
Soft	28	15.9
Firm	64	36.4
<b>Contour of the lesion (n=193)</b>		
Regular	40	20.7
Irregular	153	79.3
<b>Form of the lesion (n=161)</b>		
Rounded	58	36
Misshapen lesion	83	51.6
Elliptic	18	11.2
Linear	2	1.2
<b>Duration of the lesion (n=180)</b>		
1-15 days	11	6.1
>15 days	140	93.9
<b>Location of the lesion (n=192)</b>		
Tongue	66	34.4
Floor of the mouth	31	16.1
Lip	28	14.6
Other locations**	67	34.9

**Captions:** \*Lack of evident chromatic alteration; \*\*Other locations: soft palate (n=12); hard palate (n=6); oropharynx (n=10); gingiva (n=1); jugal mucosa (n=7); alveolar ridge (n=13); combinations of these regions (n=18).

of the pattern of exposure to risk factors in a context of social reorganization and presence of women in working activities and behaviors then exclusively of men<sup>9,13</sup>.

The distribution of race/ethnicity observed in the present study differs from other national findings with heterogeneous results. National studies indicate both higher frequency in White individuals<sup>14</sup> and in Blacks<sup>15</sup>, reflecting regional and sociodemographic variations. Most of the patients investigated herein self-declared Black or Brown, consistent with Bahia's populational profile, a state with the highest proportion of Black population in the country<sup>16</sup>. These data reinforce the necessity of analyzes that consider health social determinants and ethnic-racial disparities, factors that influence the risk exposure and timely access to diagnosis.

In addition, recent national evidences indicate that Black individuals affected by oral and oropharynx cancer present worse clinical outcomes, frequently associated with diagnosis at advanced stages and structural barriers of access to health services<sup>15</sup>. The number of deaths by oral cancer in Feira de Santana was higher among Browns and Blacks according to a study conducted in the city<sup>17</sup>. These findings suggest that high frequency of the disease in Brown and Black individuals can reflect not only the local populational composition, but also the persistence of the healthcare inequities.

Another relevant finding is related to the municipality of origin of the patients. Although most of the cases has been registered in residents of Feira de Santana, nearly 46.9% of the patients were not born in this city and presented low individual frequencies (less than five cases per city). This pattern points out that, even without a formal designation as reference service, the CRLB of Feira de Santana has been utilized as specialized diagnostic support by many municipalities of the vicinity, possibly because local services of detection and management of oral lesions are insufficient. The concentration of this demand in only one university associated service can overburden the assistance, cause delays of diagnostic and create barriers of access, especially for patients living in distant cities<sup>2</sup>.

The elevated frequency of smoking (68.5%) and alcohol use (57.7%) among the patients analyzed reaffirms the weight of these behaviors as classic risk factors of SCC, especially in the oral cavity<sup>2,5,18</sup>. Although the etiology of this neoplasm is multifactorial, the combined exposure of alcohol and smoking potentializes the risk of malignant transformation by synergic mechanisms of damage to the epithelium of the upper aerodigestive tract. The persistence of these practices in vulnerable populations requires reinforcement of the tobacco and alcohol public control policies in conjunction with local educative strategies and active screening.

73.6% of the patients worked outdoors in agriculture, an activity with chronic exposure to ultraviolet rays, a risk factor directly involved in the ethyopathogeny of SCC in the lip mainly<sup>19</sup>. Studies conducted in the Northeast region as Nogueira et al.<sup>20</sup> indicate that rural workers present low education level, long working hours and limited access to individual protection, for instance, sun blockers. Most of the individuals investigated in the present study exposed to sun radiation reported they did not adopt protective measures, which favors the development of potentially malignant conditions as actinic cheilitis, frequent precursor of lip carcinoma most of all in fair-skin<sup>5</sup> individuals<sup>6,21</sup>.

The frequency of lip cancer found in this study is above the global estimates that indicate this site as responsible for nearly 4% of lip tumors, oral cavity and pharynx, that can account for 20% to 30% of oral cancers<sup>22</sup>. It differs too from the findings of Silva, Leão and Scarpel<sup>23</sup> who, while profiling the population of oral and oropharynx cancer of *Hospital Aristides Maltez* in Salvador – BA, from June to December 2007, found only 0.9% of the cases in the lip<sup>23</sup>. This variation reinforces the influence of regional factors, especially occupational exposure to solar radiation associated with poor sun block practices allegedly associated with lip cancer. In addition, because it is a more visible location, it is possible that the search for care or referral is high, influencing its representativeness in the casuistic.

This scenario suggests that in contexts like the Bahia *Semiárido* lip cancer can assume high epidemiologic relevance, not only for the presence of risk factors already described but how they are distributed in specific population groups. The concentration of cases of individuals working in certain activities indicates the necessity of targeted approaches that consider the occupational and social particularities of these groups. In that sense, the findings reinforce the importance of integrated strategies that articulate surveillance, health education and qualification of primary attention focused in the early identification of lip lesions and reduction of inequalities in the access to care.

Another concerning question is the time of evolution of the lesions: 93.9% of the cases presented lesions with more than 15 days of duration, which can indicate delays in searching for treatment, failures of early detection in Primary Health Care or difficulties of access to the CRLB. This scenario reinforces the importance of continuous training in oral health, especially in basic attention and necessity of strengthening the referral and counter-referral flows.

The distribution of the size of the lesions shows predominance of tumors smaller than 2 cm, which



can indicate early diagnosis in part of the cases. This finding is particularly relevant since smaller lesions are associated with better prognosis, least invasive treatments and low functional and esthetic impact for the patient. From the perspective of health system, early diagnosis also contributes for the reduction of the therapeutic complexity and care costs.

Despite the positive aspect of this finding, the presence of a considerable proportion of lesions bigger than 4 cm compatible with tumors T3, reveals the persistence of late diagnoses<sup>24</sup>. This scenario suggests that early diagnosis is not homogeneous, reflecting fragilities in different lines of care. Among the factors that can contribute for this delay are the poor level of knowledge of the population about initial signs and symptoms of oral cancer and oral potentially malignant disorders (OPMD), fear of the diagnosis, in addition to barriers of access to health services<sup>25-27</sup>.

The necessity of better formation of odontology professionals for early recognition of these changes is also part of this scenario. Local evidences reinforce this problematic through a study conducted by Falcão<sup>28</sup> who exposed important gaps in the knowledge of dental-surgeons in Feira de Santana, where 21.1% of the participants denied the application of maneuvers of semiotechnique of oral cancer in the clinical examination and 69.5% did not feel they were prepared to diagnose oral cancer. These findings indicate that limitations in the formation and clinical safety of the professionals can compromise the recognition of OPMD and oral cancer, and consequently the referral of suspicious cases<sup>28</sup>.

Additionally, even in face of the predominance of lesions smaller than 2 cm in the present study, it should be investigated whether this frequency represents in fact an ideal scenario of early detection or if sub-diagnosis of initial lesions are still occurring in the Health Attention Network. This reflection points out the necessity to strengthen the actions of primary attention, emphasizing the professional qualification, expanding the access to specialized evaluation and development of educative strategies focused to the population in order to identify the initial signs and search care earlier.

The results have also raised reflections about the necessity of qualification of the mechanisms of regulation and health surveillance within SUS, especially in regard to the integration across different levels of attention. The concentration of diagnoses in a reference service reinforces the role of these facilities as a structuring axis of the line of care but also indicates possible fragilities in early detection in more centralized care levels. Additionally, the profile of lifestyles can suggest situations of more vulnerability highlighting the importance of absorbing equity-driven

strategies with territorialized actions and sensitive to social disparities. In that sense, the strengthening of health surveillance allied to the improvement of regulation flows and use of local epidemiologic data for planning can contribute for more effectiveness of cancer control actions in the context of SUS.

This study has relevant topics, among them the long time span (16 years), the census analysis of all the cases with confirmed histopathological diagnosis of SCC and standardization of data collection and analysis with high inter and intra-rater reliability. These characteristics ensure methodological robustness to the description of the profile of the patients and validity of the findings. In addition, for being a reference service playing a central role in the microregion, the data reflect a significant part of the spontaneous demand for specialized diagnosis in Bahia's *Semiárido*, contributing to fill the gaps of the literature on oral cancer in countryside contexts and social vulnerability.

The utilization of secondary data with potential sub-registration and incomplete clinical and socioeconomic data in the charts is one of the study limitations. In addition, the cross-sectional design hinders the determination of causal relations of the variables analyzed. The lack of data of clinical staging or post-diagnosis evolution limits the prognostic analysis of the sample investigated. Nevertheless, the results obtained design a relevant portrait of the reality of the oncologic oral care of the region.

Although the study has not included the follow-up of patients post-diagnosis as variable of analysis, confirmed cases of the service are routinely referred to high complexity oncologic units as Unacon and to state reference services in Bahia, for instance, "*Organização Social Irmã Dulce (OSID)*" and "*Hospital Aristides Maltez (HAM)*". This flow demonstrates the insertion of the service in the oncologic attention network and its activity as diagnostic unit and organization of the care. Furthermore, the outcomes related to the therapeutic itinerary of the patients has been investigated in a specific study developed by the research team, which can contribute for a more comprehensive understanding of the continuity of the care post diagnosis.

## CONCLUSION

The results characterize the clinical-epidemiological profile of patients with SCC treated at CRLB/Uefs between 2008 and 2024 with predominance of adult men, low education level, occupational sun exposure and risk habits as smoking and alcohol use. Therefore, it is recommended the strengthening of primary health attention focused to the early identification of suspicious

lesions, continuous training of professionals of Family Health Strategy and implementation of educative actions targeted to vulnerable populations, especially rural workers. The decentralization of specialized services and reinforcement of oral health surveillance are essential strategies to reduce diagnostic delays and improve the clinical outcomes in the region.

### CONTRIBUTIONS

Michelle Miranda Lopes Falcão contributed substantially to the conception and design of the study, acquisition, analysis and interpretation of the data, writing and critical review. Thomas Silva Gonçalves contributed to the acquisition, analysis and interpretation of the data and writing of the manuscript. Serena de Oliveira Guimarães Passos contributed to the design of the study and acquisition of the data. Jaqueline de Souza da Cruz Coelho, Wenderson Santana Souza and Wlisses Freitas Silva contributed to the acquisition, analysis and interpretation of the data. Valéria Souza Freitas, Tarsila de Carvalho Freitas Ramos and Márcio Campos Oliveira contributed to the critical review of the manuscript. All the authors approved the final version for publication.

### DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interests to declare.

### DATA AVAILABILITY STATEMENT

All the content underlying the text is contained in the manuscript.

### FUNDING SOURCES

None.

### REFERENCES

- Maciel JAC, Castro-Silva II. Mortalidade por câncer de boca frente às desigualdades sociais e o desenvolvimento humano no Brasil: um estudo ecológico. *Hygeia*. 2021;17:45-54. doi: <https://doi.org/10.14393/Hygeia17057291>
- Santos JCS, Rocha CEMC, Costa REAR, et al. Avaliação Clínico-epidemiológica de pacientes com carcinoma de células escamosas oral. *Rev Bras Cancerol*. 2022;68(1):e-141584. doi: <https://doi.org/10.32635/2176-9745.RBC.2022v68n1.1584>
- Gutierrez-Camacho JR, Avila-Carrasco L, Garza-Veloz I, et al. Connexin 43 expression as biomarker of oral squamous cell carcinoma and its association with human papilloma virus 16 and 18. *Int J Mol Sci*. 2025;26(3):1232. doi: <https://doi.org/10.3390/ijms26031232>
- Instituto Nacional de Câncer. Estimativa 2026: incidência de câncer no Brasil. Rio de Janeiro: INCA; 2026. 168 p.
- Vasconcelos RAO, Wenzel GDM, Klen GL, et al. Avaliação dos principais fatores de risco associados ao desenvolvimento do carcinoma espinocelular: revisão narrativa de literatura. *Rev Flum Odontol*. 2024;2(64):111-22. doi: <https://doi.org/10.22409/ijosd.v2i64.59591>
- Lisboa LJ, Amorim MM, Pires ALPV, et al. Perfil epidemiológico e fatores relacionados ao câncer de cavidade oral em adultos jovens brasileiros e sua relação com o óbito, 1985-2017. *Rev Bras Cancerol*. 2022;68(2):e-142063. doi: <https://doi.org/10.32635/2176-9745.RBC.2022v68n2.2063>
- Piemonte ED, Lazos JP, Belardinelli P, et al. Efecto de la acumulación de factores de riesgo en el riesgo de carcinoma de células escamosas bucal. *Rev Fac Cien Med Univ Nac Cordoba*. 2021;78(2):158-65. doi: <https://doi.org/10.31053/1853.0605.v78.n2.31247>
- Amorim MM, Lisboa LJ, Conceição SS, et al. Determinantes sociais de saúde e óbito por câncer oral em uma unidade de alta complexidade em oncologia de um município da Bahia. *J Dent Pub H*. 2019;10(2):97-107. doi: <https://doi.org/10.17267/2596-3368dentistry.v10i2.2446>
- Almeida IFB, Teles Ágata RCQ, Batista LL, et al. Panorama atual do câncer de boca na região nordeste do Brasil: de 2015 a 2020. *Revisa*. 2023;12(2):391-8. Disponível em: <https://rdcsa.emnuvens.com.br/revista/article/view/149>
- Landis JR, Koch GG. The measurement of observer agreement for categorical data. *Biometrics*. 1977;33(1):159-74. doi: <https://doi.org/10.2307/2529310>
- SPSS®: Statistical Package for Social Science (SPSS) [Internet]. Versão 23.0. [Nova York]. International Business Machines Corporation. [acesso 2025 mar 9]. Disponível em: [https://www.ibm.com/br-pt/spss?utm\\_content=SRCWW&p1=Search&p4=43700077515785492&p5=p&gclid=CjwKCAjwgZCoBhBnEiwAz35Rwiltb7s14pOSLocnooMOQh9qAL59IHVc9WP4ixhNTVMjenRp3-aEgxoCubsQAvD\\_BwE&gclid=aw.ds](https://www.ibm.com/br-pt/spss?utm_content=SRCWW&p1=Search&p4=43700077515785492&p5=p&gclid=CjwKCAjwgZCoBhBnEiwAz35Rwiltb7s14pOSLocnooMOQh9qAL59IHVc9WP4ixhNTVMjenRp3-aEgxoCubsQAvD_BwE&gclid=aw.ds)
- Conselho Nacional de Saúde (BR). Resolução nº 466 de 12 de dezembro de 2012. Aprova diretrizes e normas regulamentadoras de pesquisas envolvendo seres humanos. *Diário Oficial da União, Brasília, DF*. 2013 jun 13; Edição 112; Seção 1:59.



13. Rodrigues AO. Mulheres lavradoras: Modos inventivos de (re)existência em comunidades rurais do semiárido baiano [dissertação]. Caetité: Universidade do Estado da Bahia; 2022.
14. Emerick C, Magalhães TG, Barki MCLJM, et al. Perfil sociodemográfico e clínico patológico de 80 casos de carcinoma de células escamosas bucal. *J Bras Patol Med Lab.* 2020;56:e1492020. doi: <https://doi.org/10.5935/1676-2444.20200001>
15. Ramos LF, Sobrinho AR, Ribeiro LN, et al. Racial disparity and prognosis in patients with mouth and oropharynx cancer in Brazil. *Med Oral Patol Oral Cir Bucal.* 2022;27(4):e392-6. doi: <https://doi.org/10.4317/medoral.25334>
16. Belandi C, Gomes I. Censo 2022: pela primeira vez desde 1991, a maior parte da população do Brasil se declara parda. Agência IBGE [Internet], Rio de Janeiro; 2023 Jun 22 [acesso 2025 maio 22]. Disponível em: <https://agenciadenoticias.ibge.gov.br/agencia-noticias/2012-agencia-de-noticias/noticias/38719-censo-2022-pela-primeira-vez-desde-1991-a-maior-parte-da-populacao-do-brasil-se-declara-parda>
17. Almeida IFB, Almeida DB. Investimento, internações e óbitos por câncer de boca na cidade de Feira de Santana, Bahia. *J Dent Public Health.* 2021;12(1):12-9. doi: <http://dx.doi.org/10.17267/2596-3368dentistry.v12i1.3560>
18. Chow MS, Duvvuri U. Head and neck cancer of unknown primary: a surgical perspective. *Semin Radiat Oncol* [Internet]. 2025;35e2:207-213 doi: <https://doi.org/10.1016/j.semradonc.2025.02.007>
19. Superintendência de Estudos Econômicos e Sociais da Bahia. Diagnóstico socioeconômico ambiental do Semiárido baiano [Internet]. Salvador: Governo do Estado da Bahia; 2018 [acesso 2025 maio 23]. Disponível em: <https://www.ba.gov.br/casacivil/sites/site-casacivil/files/2024-05/2018DiagnosticosocioeconomicoambientaldoSemiarioBaiano.pdf>
20. Nogueira FMA, Damascena GN, Otero UB, et al. Prevalência da exposição à radiação solar em trabalhadores no Brasil: subsídios para ações de prevenção do câncer de pele relacionado ao trabalho. *Rev Bras Cancerol.* 2025;71(1):e-054880 doi: <https://doi.org/10.32635/2176-9745.RBC.2025v71n1.4880>
21. Nascimento AM, Gouveia JS, Dias RVS, et al. Parâmetros clínicos e estadiamento do carcinoma epidermóide oral em um centro de referência. *RSD Journal.* 2025 [acesso 2025 maio 25];13(11):e-89131147372. doi: <https://doi.org/10.33448/rsd-v13i11.47372>
22. Rungay H, Colombet M, Ramos da Cunha A, et al. Global incidence of lip, oral cavity, and pharyngeal cancers by subsite in 2022. *CA Cancer J Clin.* 2026;76(1):10.3322/caac.70048. doi: <https://doi.org/10.3322/caac.70048>
23. Silva PSL, Leão VML, Scarpel RD. Characterizing the population with mouth and orofaringe cancer, attended in the sector of head and neck in a referral hospital in Salvador City – BA. *Rev CEFAC.* 2009;11(Supl3):441-7. doi: <https://doi.org/10.1590/S1516-18462009000700020>
24. Gomez RS, Meira IA, Soares MS, et al. Total diagnostic delay in oral cancer: a systematic review and meta-analysis. *Oral Oncology.* 2020;104:104651. doi: <https://doi.org/10.4317/medoral.24808>
25. Grossmann SMC, Sales ACR, Reis DS, et al. Knowledge of oral cancer by a Brazilian population. *J Canc Educ.* 2021;36(5):965-70. doi: <https://doi.org/10.1007/s13187-020-01722-4>
26. Rieger SB, Volpato LER, Bavaresco C. Tempo de diagnóstico e tratamento do câncer bucal no Brasil: uma revisão narrativa. *Aracê.* 2025;7(4):20148-59. doi: <https://doi.org/10.56238/arev7n4-259>
27. Casotti E, Almeida PF, Silva AN. Trajetórias assistenciais de usuários com câncer de boca na busca por cuidados na Rede de Atenção à Saúde. *Physis.* 2025;35(2):e350217. doi: <https://doi.org/10.1590/S0103-73312025350217pt>
28. Falcão MML, Alves TDB, Freitas VS, et al. Conhecimento dos cirurgiões-dentistas em relação ao câncer bucal. *Rev Gaúch Odontol* [Internet]. 2010 [acesso 2026 maio 15];58(1). Disponível em: [http://revodontobvsalud.org/scielo.php?script=sci\\_arttext&pid=S1981-86372010000100006](http://revodontobvsalud.org/scielo.php?script=sci_arttext&pid=S1981-86372010000100006)

Recebido em 28/1/2026  
Aprovado em 25/3/2026

