RESEARCH ARTICLE

EPIDEMIOLOGICAL PROFILE OF DIAGNOSED INJURIES IN BUCAL CANCER: STUDY OF A BRAZILIAN POPULATION

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ARTICLE INFO	ABSTRACT
	Introduction: Oral cancer is presented in different ways and variable complexities. These lesions present a high mortality rate, therefore, it is considered a severe health problem in the world. The treatment of these lesions is established according to extension, location, early detection and diagnosis. **Objective:** To characterize epidemiological aspects of diagnosed patients with oral cancer in a Brazilian population. **Methods:** Cross-sectional study, analytical-descriptive, retrospective, based on 3730 medical records of cancer cases provided by the Medical Service. The statistical descriptive analysis was performed together with the clinical, sociodemographic variables and risk factors. **Results:** In the period analysed, 77 cases of oral cancer occurred, accounting for 2.06% amongst all the cancer cases registered in the same period. There was a predominance of male individuals (73%), mixed race (57%), in the age range from 55 to 64 years old (29%), coming from urban areas (52%). Squamous cell carcinoma appeared in 78% of the cases and the most prevalent clinical findings were locations in non-specific areas of the tongue in stage III. Surgical approaches, in isolated modalities or associated with radiotherapy and chemotherapy were the most performed treatments. **Conclusion:** Oral cancer in the countryside of the state of Ceará is belatedly diagnosed and affects the majority of mixed race men in advanced ages. Tobacco and alcohol consumption presents high prevalence. The regions of salivary glands and tongue are the most common affected locations by this pathology.

INTRODUCTION

Cancer is a chronic disease that causes high mortality and morbidity. It is characterized by the abnormal proliferation of cells and it can invade adjacent organs and tissues, leading to malignant tumours. The most recent survey performed by the World Health Organization (WHO), in their project Globocan/IARC, estimated that in 2012 there would be 14.1 million new cases of cancer (Ferley *et al.,* 2015). However, it is expected that this incidence increases to 20 million until 2025 (International Agency for Research on Cancer, 2014). It was predicted that new cases would affect a ratio of approximately 3:1 between men and women impacted in all Brazil in 2016. However, in Ceará the number of men who would be affected, 300, would be close to the number of women, 240 (Ministério Da Saúde, 2015). Oral cancer comprises neoplasms that affect the lips, the interior of the oral cavity and the oropharynx,

including the following locations, according to the International Classification of Diseases for Oncology (ICD-O-3, 2000): Lip, base of tongue, other and unspecified parts of tongue, gum, floor of the mouth, palate, other and unspecified parts of the tongue, parotid glands, other and unspecified major salivary gland, tonsil and oropharynx. The occurrence of carcinogenesis is due to an unbalance of molecular functions provided by extrinsic factors and genetic instability culminates into neoplastic cells (Matovani *et al.,* 2008). In addition, smoking, alcoholism and HPV infections are considered the main risk factors by Ministério da Saúde (2015). Nevertheless, the development of neoplasms can be linked to dietary factors, direct exposure to sunlight, poor oral hygiene and chronic inflammations (Alves *et al.,* 2013; Petersen, 2008). Distinguishing the effects, separately, of alcohol and tobacco, has been a challenge, given that alcoholics tend to be smokers and vice-versa. Still, it is evident the synergic effects of the two substances (Petersen, 2009), that is, amongst all the risk factors, the one with the greater potential for carcinogenesis, related with 65% to 90% of oral neoplasms (Souza, 2006).

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Knowledge regarding risk factors is an important component in cancer prevention. According to RegistrosHospitalares de Câncer (2012), the majority of patients with mouth neoplasms seek for medical care already in advanced stages (III and IV), having as a consequence mutilating treatments. These treatments decrease the quality of life and survival time of patients. Such information is concerning, given that the mouth is a location of easy access, for dentists as well as for patients through self-examinations (Quirino *et al.,* 2006). However, it is noted that the population is poorly informed, neglecting signs and symptoms, as well as a lack of professional preparation at identifying and referring patients with cancerous and precancerous lesions (Cimardi and fernandes, 2009). Information regarding epidemiologic profiles of individuals affected by any infirmities, especially those of great prevalence in the population, is a valuable instrument in health planning. However, the literature is lacking data that characterize patients with oral cancer in the countryside of Ceará. In order to positively contribute for this scenario, this work aims to characterize epidemiologic aspects of patients diagnosed with oral cancer in the period of 2014 to 2016 at a hospital skilled as a high complexity assistance unity in oncology (UNACON) in the region of Cariri – Ceará.

MATERIALS AND METHODS

The current study, cross-sectional, analytic-descriptive, retrospective, is based on 3730 patients diagnosed with cancer that were treated at the Hospital Maternidade São Vicente de Paulo, located at the municipality of Barbalha, Ceará. For this study to be performed there was an approval from the ethics committee (protocol nº 1.605.917). Clinical data such as: Age, skin colour, gender, risk factors (smoking, alcoholism amongst others), clinical and laboratorial characteristic (histopathology, staging, primary lesion location, date of entrance at the attendance service, beginning and type of treatment) were obtained through medical records. Medical records from patients with history of lesions diagnosed as oral cancer between the period of 2014 to 2016 were included. The records that met the inclusion criteria described were subject to analysis in the study. Medical records that were not available at the Serviço de AtendimentoMédico (SAME) in the same period of data collection were excluded.
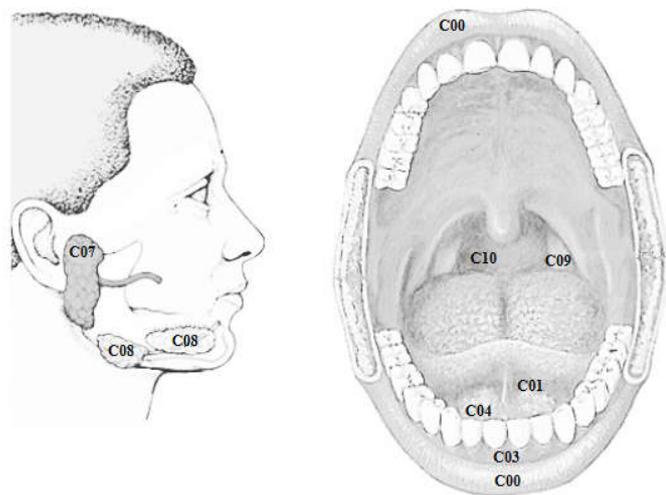

Figure 01. Locations according to to International Classification of Diseases for Oncology, third edition (ICD-O-3, 2000)

Data collection of patients diagnosed with oral cancer was performed based on the categories C00 to C10 according to International Classification of Diseases for Oncology, that is: C00 lip, C01 base of tongue, C02 other and unspecified parts of the tongue, C03 gum, C04 floor of mouth, C05 palate, C06 other and unspecified parts of mouth, C07 parotid gland, C08 other and unspecified major salivary gland, C09 tonsil, C10 oropharynx. As figure 01 shows.

Statistical analysis were performed through the chi-square test among the variables gender, skin colour, degree of education, smoking experience, alcohol experience and the variables of clinical staging. When n<5, Fisher exact test was performed. The information of interest in the research, when absent, were included with the term "not informed", for statistical purposes.

RESULTS

In the period from January 2014 to October 2016, final date of the collection, 3730 medical records of patients diagnosed with cancer were registered; From these, 77 were cases of oral cancer (C00 to C10 inICD-O-3). Table 1 shows thesociodemographic characteristics of the analysed individuals, where it is found greater prevalence of males, age group from 55 to 64 year old, mixed race, illiterate, from urban areas. The prevalent occupation observed was farmer, corresponding to 48% of the individuals.

Table 1. Distribution of the sample according to sociodemographic variables of the individuals diagnosed with oral cancer

Variable	N	Percentage
Gender		
Female	21	27
Male	56	73
Others*	0	0
Age group		
< 44	6	8
45 – 54	11	14
55 – 64	22	29
65 – 74	14	18
75 – 84	21	27
> 85	3	4
Others**	0	0
Ethnicity		
Mixed race	44	57
Black	16	21
White	7	9
Others***	10	13
Educational attainment		
Literate	32	41
Illiterate	33	43
Others****	12	16
Provenance		
Rural	29	38
Urban	40	52
Others*****	8	10
*, **, ***, ****, ***** Variables not informed		

Clinical characteristics were described in Table 2, presenting the primary location of the tumours, disease staging and type of treatment, following the description established by ICD-O-3. The time elapsed between diagnose and beginning of treatments was approximately 3 months. The most common histological type was squamous cell carcinoma, present in 78% of the diagnosed cases. Adenocarcinoma cases were found in tumours in salivary glands; other histologic types that were found in fewer quantities were:

Table 2. Clinical characteristics of the individuals diagnosed with oral cancer

Variable	N	Percentage
Primary location of the tumour		
C00 Lip	8	11
C01 Base of the tongue	11	14
C02 Other and unspecified parts of tongue	20	26
C03 Gum	1	1
C04 Floor of mouth	6	8
C05 Palate	6	11
C06 Other and unspecified parts of mouth	6	1
C07 Parotid gland	6	11
C08 Other and unspecified major salivary gland	6	1
C09 Tonsil	6	4
C10 Oropharynx	6	13
Others*	0	0
Staging		
I	11	14
II	10	13
III	20	26
IV	19	25
Others**	17	22
Type of treatment		
Surgery	27	37
Surgery + Radiotherapy	5	7
Surgery + Chemotherapy	2	3
Surgery + Radiotherapy + Chemotherapy	11	15
Chemotherapy	1	1
Radiotherapy + Chemotherapy	8	11
Radiotherapy	8	11
Completely refused the treatment	3	4
Others***	8	11
*, **, *** Variables not informed		

Table 3. Distribution of the oral cancer cases according to profiles of tobacco and alcoholic beverages consumption

Variable	N -Percentage	
Non-smoker and non-alcoholic	-	5 (6%)
Non-synergic consumption		
Used to smoke, but never consumed alcoholic beverages	7 (21%)	33 (43%)
Smokes, but never consumed alcoholic beverages	25 (76%)	
Never smoked, but consumes alcoholic beverages	1 (3%)	
Synergic consumption		
Quit smoking, but still consumes alcoholic beverages	3 (13%)	23 (30%)
Quit smoking and alcoholic beverages consumption	1 (4.5%)	
Quit alcoholic beverages consumption, but still smokes	1 (4.5%)	
Smokes and consumes alcoholic beverages	18 (78%)	

Acinic cell carcinoma of the salivary glands, mucoepidermoid carcinoma, basal cell carcinoma, Merkel cell carcinoma and carcinoma ex pleomorphic adenoma. Table 3 shows the cases of oral cancer distributed according to the synergism of tobacco and alcoholic beverages intake. Around 95% of the individuals consumed, at some moment of their lives, tobacco and alcohol.

DISCUSSION

Epidemiological surveys are fundamental to a permanent vigilance of oral cancer, being an aid to elaboration of health planning, indicating distribution of diseases and risk factors linked to the profile of affected individuals. In addition, these researches allow health professionals to identify more vulnerable population groups and take directed measures, especially, to these, as a more effective form of control. The good quality of hospital records is indispensable to perform a correct situational diagnose of cancer, clarifying the risks of this disease to health professionals and the lay population. The percentage of oral cancer casesamongst all the cases of cancer registered and found in this research was slightly inferior to the estimate provided by Ministério Da Saúde (2014, 2015) for the years of 2014, 2015 and 2016, 2.06% compared to 2.55% estimated. It was also less than the values found by Santos *et al.,* 2015 and greater than the numbers reported by Zheng1 *et al.,* 2015. These differences can be explained by the real incidence of cancer in the population, establishing a gene-environment correlation (Lee *et al.,* 2012), nevertheless it can reflect the access to health services. The proportion of oral cancer casesbetween men and women has been levelling along the years. This scenario can be explained by the increase in tobacco consumption and alcohol by women (Osazuwa-Peters *et al.,* 2016). However, they still present more protective factors than men, for example, a higher consumption of fruits and vegetables (Pavia *et al.,* 2006). The sociodemographic characteristics reported in the literature were similar to the ones found in this research, with a greater prevalence of male individuals, age superior to 50 years old, smokers, coming from urban areas (Andrade *et al.,* 2015, Sharma *et al.,* 2012; Zheng *et al.,* 2015). There's discrepancy in the literature regarding individuals more prone to developing oral cancer, as for skin colour. Mosele*et al* (2008) and Santos *et al* (2008) cited white colour as the more prevalent. On the other hand,

Osazuwa-Peters *et al*. (2016) and Brenner *et al*. (2007), observed a greater prevalence of black individuals. It is suggested that the unequal incidence between population groups is linked to not only internal and external biological factors, but also to the access of these populations to health systems and quality of assistance provided (Goodwin *et al.,* 2008). In this research, the greater incidence of the disease was for mixed race individuals. According to the InstitutoBrasileiro de Geografia e Pesquisa (IBGE), this is the most predominant ethnicity in the state of Ceará, together with black individuals. This would justify the prevalence of patients with these characteristics. The anatomical location of the tumour is considered a prognosis factor, in view of its influence in the clinical behaviour of the tumour. The site where more cases were diagnosed was the tongue (C01 in C02 inICD-O-3), corroborating with the current literature (AL-JABER *et al.,* 2016; Katsanos *et al.,* 2016; Santos *et al.,* 2015). The most frequently diagnosed histological types of oral cancer are: Squamous cell carcinoma, basal cell carcinoma, adenoid cystic carcinoma, undifferentiated carcinoma, mucoepidermoid carcinoma, adenocarcinoma and malignant ameloblastoma (Borges *et al.,* 2008). However, and concurring with the literature (Al-Jaber *et al.,* 2016; Borges *et al.,* 2008; Kim *et al.,* 2016; Zheng *et al.,* 2015), the greatest prevalence in this study was of squamous cell carcinoma. One of the most important risk factors for the development of oral cancer is smoking, where there are synergic effects between tobacco substances and concomitant use of alcohol (Petersen, 2009). The study of Singh *et al*. (2014) highlighted anomalies caused by tobacco, smoked and chewed, regarding morphology of the oral mucosa. Such alterations would indicate malignancy. Rodriguez *et al.* (2004) demonstrated that the odds ratio to have oropharynx and oral cancer in inveterate smokers was 20.7, while as for alcoholics this ratio was 4.9. In this same study, the evaluation of the variables alcoholism and smoking combined presented an odds ratio of more than 48.

The current study exposed that in 96% of the cases analysed, the individuals had experience with tobacco or alcoholic beverages. However, the most part of the cases, 43%, was related to non-synergic consumption of these products. A similar panorama was verified by Andrade *et al*. (2015), yet, these authors verified that when there was a synergic consumption of tobacco and alcohol, the risks for developing oral squamous cell carcinomas was increased compared to the non-synergic consumption and for those who abstained from these products. As for the classification of the tumours, TNM system is commonly used. This system is based on the extension of the tumour (T), on the impairment or not of nearby lymph nodes (N), and the presence of distant metastasis (M). Once T, N and M are determined, they are combined and a global stage of 0, I, II, III or IV is attributed (AJCC, 2010). There was a greater prevalence, in this study, of cases in advanced stages, III and IV. This denotes the lack of information and negligence of the population regarding signs and symptoms of oral cancer and/or the lack of preparation of health professionals in diagnosing them. Such perspective is given by the fact that the oral cavity is a location of easy access for doctors and dentists, as well as for affected individuals (Cimardi and Fernandes, 2009). In the initial stages of oral cancer, surgery and radiotherapy are vastly used, either as an individual modality or as combined. In aggressive tumours, the failure rates are high, so the combined modalities of surgery

and radiotherapy, with or without chemotherapy, and planning and execution by multidisciplinary team are preferable (Sankaranarayanan *et al.,* 2015). Corroborating with the authors Osazuwa-Peters *et al.* (2016) and Goldenberg *et al* (2014), surgery was the most performed treatment. In the current research, the combined modalities of surgery, radiotherapy and chemotherapy have values respectively inferior to the variable surgery. Non-surgical treatments were performed in 27% of the cases, either by medical indication or patient refusal, in view of the impact that surgeries could bring to the quality of life. The study of Goldenberg *et al* (2014) highlighted that the more belated oral cancer is diagnosed, the greater the probability of performing palliative treatments only. This scenario reinforces the need for health control policies, providing smaller incidences of the disease, as well as early diagnoses when this one occurs. Brazil is an extensive country, with distinct culture and economy, and health follows this diversity. In spite of the limitations related to the clarity of the data contained in the medical records, this research allowed to draw the epidemiological profile of patients with oral cancer in the countryside of Ceará.

Conclusion

It can be concluded from this study that:

- Oral cancerlesions are more common in male gender individuals.
- Tobacco and alcohol were the most common risk factors.
- The most affected anatomic locations were the salivary glands and tongue. Squamous cell carcinoma was the most frequent histologic type in oral lesions.
- The majority of patients obtained stage III.

The most referred modality of treatment was surgery, followed by the combination of radiotherapy and chemotherapy.

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