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## INTEGRATIVE REVIEW OF THE LITERATURE

Revisão integrativa sobre o câncer bucal

Integrative review on oral cancer

Revisión integrativa sobre o câncer bucal

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### ABSTRACT

**Objective:** To analyze national and international studies on oral cancer. **Method:** This is an integrative literature review. Were selected 28 articles that met research inclusion criteria. Data were processed in IRAMUTEC software and analyzed by descending hierarchical classification based on the dendrogram. **Results:** There were presented in 05 classes, namely: 1-The prevention and treatment of oral morbidity. 2. The rehabilitation of patients with oral cancer. 3-Quality of life of patients in therapy for oral cancer. 4- The multidisciplinary professional team of health care in the prevention of oral cancer. 5 Screening for oral cancer for decreasing prevalence. **Conclusion:** Oral cancer is a major public health problem in Brazil and worldwide. There is need for greater investment in research related to oral cancer and implementation of public policies screening for oral cancer and decreasing prevalence. **Descritores:** Oral health, Mouth neoplasms, Dentistry.

### RESUMO

**Objetivo:** Analisar estudos nacional e internacional sobre o câncer bucal. **Método:** Trata-se de uma revisão integrativa da literatura. Foram selecionados 28 artigos que atenderam aos critérios de inclusão da pesquisa. Os dados foram processados no software IRAMUTEC e analisados pela classificação hierárquica descendente com base no dendrograma. **Resultados:** Foram apresentados em 05 classes, a saber: 1-A prevenção e o tratamento das morbidades orais. 2- A reabilitação do paciente com câncer de boca. 3-Qualidade de vida dos pacientes em terapia para câncer bucal. 4- A equipe profissional multidisciplinar de saúde nos cuidados de prevenção do câncer oral. 5- O rastreamento do câncer oral para diminuição da prevalência. **Conclusão:** O câncer oral é um grave problema de saúde pública no Brasil e no mundo. Há necessidade de maiores investimentos nas pesquisas relacionadas com o câncer bucal e implementação das políticas públicas para o rastreamento do câncer oral e diminuição da prevalência. **Descritores:** Saúde oral, Câncer oral, Odontologia.

### RESUMEN

**Objetivo:** analizar los estudios nacionales e internacionales sobre el cáncer oral. **Método:** Se trata de una revisión integradora de la literatura. Se seleccionaron 28 artículos que cumplían los criterios de inclusión del estudio. Los datos se procesaron en el software IRAMUTEC y se analizaron por clasificación jerárquica descendente basado en el dendrograma. **Resultados:** No se presentaron en 05 clases, a saber: 1-La prevención y el tratamiento de la morbilidad oral. 2. La rehabilitación de los pacientes con cáncer oral. 3-La calidad de vida de los pacientes en la terapia para el cáncer oral. 4- El equipo multidisciplinario de profesionales de la salud en la prevención del cáncer oral. 5 El cribado del cáncer oral para disminuir la prevalencia. **Conclusión:** cáncer oral es un problema importante de salud pública en Brasil y en todo el mundo. No hay necesidad de una mayor inversión en la investigación relacionada con el cáncer oral y la implementación de políticas públicas para el cribado del cáncer oral y la disminución de la prevalencia. **Descritores:** Salud dental, El cáncer oral, Odontología.

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## INTRODUCTION

**C**urrently cancer is a major public health problem and is reported as one of the most frequent causes of death in Brazil, next to the circulatory, infectious and parasitic diseases, ranging from 49 years.<sup>1</sup>

The cancer is configured in an uncontrolled proliferation of abnormal cells in the body. Is considered a chronic disease that causes disability or invalidity, and requires constant hospitalizations and frequent outpatient treatment in the health system. It is seen as a multifactorial disease caused by a combination of environmental factors and predisposing genetic factors that at any given time and under favorable conditions, can have an effect in predisposed individuals.<sup>2</sup>

Oral cancer includes cancers of the lip and oral cavity, that is, oral mucosa, gums, hard palate, tongue and floor of the mouth, especially the lip cancer most common in white people. In other regions of the mouth involvement is more evident in smokers.<sup>1</sup>

The oral cancer is among the ten most prevalent cancers in the general population, with the 4th highest incidence cancer in males, is considered the most common cancer in the head-neck region. The World Health Organization indicates that mortality from mouth cancer, in 50 countries showed a higher incidence in males, with rates ranging from 0.9 per 100,000 in countries in South America and 14.8 per 100,000 in Asian countries, while that in female rarely exceed 2 deaths per 100,000. Early diagnosis is associated with better outcomes.<sup>3</sup>

The most frequently reported risk factors are: advanced age (over 40 years), smoking pipes and cigarettes, alcohol, poor oral hygiene and use of ill-fitting dentures. Experts indicate the routine examination of the mouth by a professional in order to track initial lesions, especially in people with increased susceptibility.<sup>1,2</sup>

Regarding the treatment the most commonly used therapeutic methods are surgery and / or radiation therapy, especially for initial lesions, which have not yet spread to lymph nodes in the neck or to remote organs.<sup>1-3</sup>

Based on these problems, the study aims to analyze national and international researchs on oral cancer.

## METHOD

This is an integrative review (IR) of the scientific literature on the impact of oral, operationalized from the following steps: theme identification and selection of the research question; establishment of inclusion and exclusion criteria; identification of pre-screened and selected studies; categorization of the selected studies; analysis and interpretation of results and presentation of the review / synthesis of knowledge.<sup>4</sup>

To conduct the IR the guiding question was elaborated by the PICO strategy (P: Patient, I: Intervention, C: Comparison and O: Outcomes):<sup>4</sup> What is the panorama of oral cancer and the relationship with quality of life patient?

For completion of this study a search was conducted in PUBMED, Springer Link, JADA and Elsevier, using the combination of controlled descriptors, registered in the Medical Subject Headings (MeSH): oral health, oral cancer, dental and dentistry.

Inclusion criteria were: primary studies on oral cancer; studies available in full; studies available electronically; studies published in the period from 2011 to 2015. The exclusion criteria were: articles repeated in the databases; opinion pieces; reflection of articles and editorials.

For processing and data analysis, were used the software IRAMUTEQ (Interface de R pour l'Analyse Multidimensionnelle de Textes et de Questionnaires), which was developed in France by Pierre Ratinaud (2009). This program began to be used in Brazil in 2013.<sup>5</sup>

This is a program that is anchored in the R software and allows different forms of statistical analysis of textual corpus and tables of individuals in words. The IRAMUTEQ enables different types of analysis, from simple to multivariate such as Hierarchical Descending Rating, and organizes the dictionary distribution so that it is easy to understand and clear visibility. The software, to perform classical lexical analysis, identifies and reformats the text units, which become Initial Context Units (ICU) of elementary context units (ECU).

They are also identified the number of words, the average frequency and the number of hapax (words with frequency one). Vocabulary research is made and reduced to words, based on their roots (lemmatization), being created a dictionary from the reduced and identified the active and additional forms. For this phase of the study, followed by the steps described below.

Were conducted the search of articles in databases, being located 104 studies on oral cancer in dentistry and after the adoption of the inclusion criteria, selected 29 studies for processing and analysis. The Corpus consisted of existing data in the conclusions of the studies, placed in a single text file, as the IRAMUTEQ tutorial guidance. The corpus was formed by the set of texts to be analyzed, fragmented by the software, text segments. During the preparation of the corpus were made readings, corrections and decoding of fixed variables, as shown in the following table.

Article	DATABASE	YEAR
Art_1 to art_29 (selected articles)	Bas_01:PubMed	Tem_01: 2011
	Bas_02: Springer Link	Tem_02: 2012
	Bas_03: JADA	Tem_03: 2013
	Bas_04: Elsevier	Tem_04: 2014
		Tem_05: 2015 (Year of publication)

For the analysis, were defined the method of Hierarchical Classification Descending (CHD), proposed by Reinert (1990), in which texts are classified according to their vocabularies and their set is divided by the frequency of reduced forms. From crossing arrays of text segments and words (repeated tests  $X^2$ ) applies CHD method to obtain a



stable and definitive classification. Also used the method of Wordcloud, grouping words and graphically organizes according to their frequency. It is a simple lexical analysis, however graphically interesting.<sup>5</sup>

Analysis for CHD seeks class of text segments that, besides exhibit similar vocabulary among themselves have different vocabulary of text segments in the other classes. The relationship between classes is illustrated by the dendrogram (Figure 1).

## RESULTS AND DISCUSSION

Of the 104 studies located, 28 were selected, available in English and in accordance with the criteria of articles. So IRAMUTEQ recognized the separation of the corpus in 28 initial text units (ECU's), 97 segments of text, 1114 distinct and 3338 occurrences of words in the text. The average frequency of forms was 2.996409, generating different semantic classes, analyzed by CHD.

The CHD took into consideration the combination of classes to the fixed variables of the study: Database; Journal of publication and Year of publication, which represented all the material submitted for consideration, being considered 68.04% of the corpus.

Sought to identify and analyze the textual fields and interpretation of meanings naming them with their meanings in classes: 1 - The prevention and treatment of oral morbidity. 2. The rehabilitation of patients with oral cancer. 3-Quality of life of patients in therapy for oral cancer. 4- The multidisciplinary professional team of health care in the prevention of oral cancer. 5-Screening for oral cancer for decreasing prevalence.

Through Hierarchical Classification Descending, the IRAMUTEQ presented the dendrogram of the classes obtained from the corpus. To construct the dendrogram (Figure 1), which shows the partitions that have been made in the corpus, until it reached the final classes, and for subsequent analysis were considered relevant those words that had gotten frequency equal to or greater than recorded medium frequency (3) , X2 greater than or equal to 20 and p significance  $\geq 0,0001$ . Each class was represented by the most significant words and their associations with the class (chi-square).

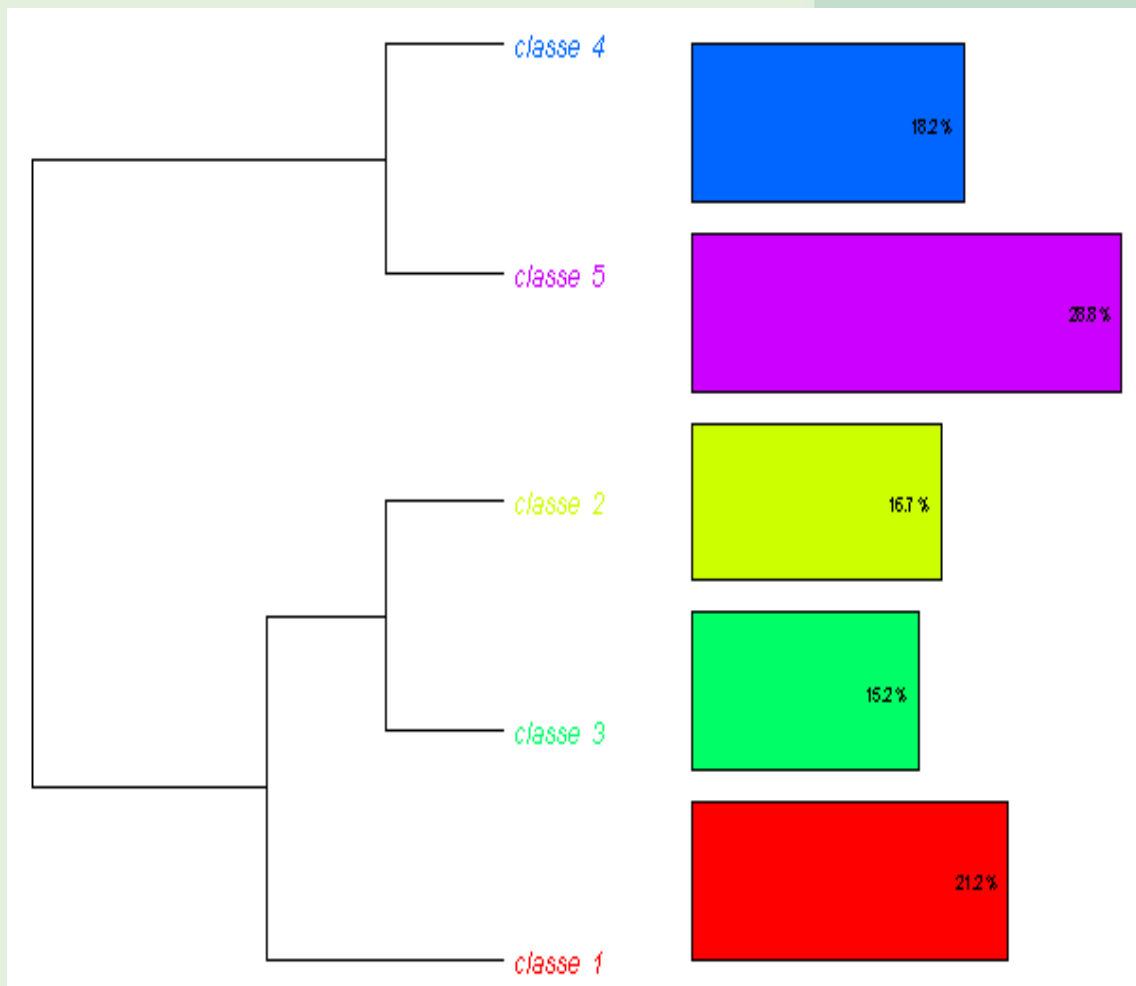


Figure 1. Thematic Structure overview of the oral health of patients with oral cancer.

The similarity analysis, conducted by IRAMUTEC, provides a type of analysis based on graph theory which enables to identify the co-occurrences between words and the result brings indications of connectivity between them, assisting in the identification of the representation structure.

From the graph of the results, which generated a semantic range of most frequent words in the text, it was noticed that the words, cancer, patient, buccal, oral, health, study and results were those who had more prominent, followed by treatment, rehabilitation, quality and prevention.

Figure 2. Analysis of similarity between the words - the oral health of patients with oral cancer.



Cancer in Iran <sup>16</sup>		
Oral cancer from a health promotion perspective: experience of a diagnosis network in Ceará <sup>17</sup>	PUBMED	2014
Oral Complications and Management Strategies for Patients Undergoing Cancer Therapy <sup>18</sup>	PUBMED	2014
Oral cancer calibration and diagnosis among professionals from the public health in São Paulo, Brazil <sup>19</sup>	PUBMED	2013
Knowledge of Oral Cancer Among Recently Graduated Medical and Dental Professionals in Amman, Jordan <sup>20</sup>	PUBMED	2012
Poor oral hygiene and risk of esophageal squamous cell carcinoma in Kashmir <sup>21</sup>	PUBMED	2013
Socio demographic profile of oral cancer patients residing in Tamil Nadu - A hospital based study <sup>22</sup>	PUBMED	2013
Dental rehabilitation after surgery for oral cancer <sup>23</sup>	PUBMED	2012
Increasing Screening Intentions for Oral and Pharyngeal Cancer <sup>24</sup>	PUBMED	2013
Self-reported oral cancer screening by smoking status in Maryland: trends over time <sup>25</sup>	PUBMED	2013
Dental Implants in Oral Cancer Reconstruction <sup>26</sup>	PUBMED	2011
Patients' perceptions of oral cancer screening in dental practice: a cross-sectional study <sup>27</sup>	PUBMED	2012
Are we able to reduce the mortality and morbidity of oral cancer; Some considerations <sup>28</sup>	PUBMED	2013
Identifying Factors to Improve Oral Cancer Screening Uptake: A Qualitative Study <sup>29</sup>	PUBMED	2012
Continuing Education in Oral Cancer Prevention for Dentists in Spain <sup>30</sup>	PUBMED	2011
Risk factors for postoperative dysphagia in oral cancer. <sup>31</sup>	PUBMED	2012
High dose rate brachytherapy for oral cancer <sup>32</sup>	PUBMED	2013
Oral rehabilitation with dental implants after cancer treatment <sup>33</sup>	PUBMED	2011

### As Classes e suas descrições

#### Class 1: The prevention and treatment of oral morbidities

Class 1 features 14 ECUs, corresponding to 21% of the corpus and is directly associated to the classes 2 and 3. The most frequent words and significant segments of these texts are: treatment, prevention, shows results, study, evaluation, research and disease (p <0.0001), derived predominantly from articles 06, 28 and 18 in order of significance.

The apprehended contents reveal the impact of cancer prevention in reducing the incidence and mortality and establishes treatment modalities for patients with oral cancer.

#### Class 2. The rehabilitation of patients with oral cancer

Class 2 shows 11ECUs, corresponding to 16.67% of the corpus and is directly associated with the class 3. The most frequent and significant words of this text segments are: rehabilitation, therapy, also, function , result, effect, cell, odonto (p <0.0001) derived predominantly from articles 5 and 19 in order of significance.



Radical surgery of oral cancer is indicated when there are metastatic lesions. Despite the incorporation of immediate reconstruction techniques, the deformities are still high and can compromise the quality of life of these patients.

### **Class 3: Quality of life of patients in therapy for oral cancer**

Class 3 features 10 ECUs, accounting for 15% of the corpus and is directly associated with the class 2. The most common and significant words of these texts segments are: life, quality, effects, use, population, function and conclusion, drawn predominantly from articles 4 and 19 in order of significance.

In later stages of oral cancer when surgery is not possible, is indicated chemotherapy combined with radiotherapy, characterized by a poor prognosis. In these cases, the lesions become large and more complicated treatment, having major negative impact on the quality of life of patients.

### **Class 4. The multidisciplinary professional team of health care in the prevention of oral cancer**

Class 4 features 12 ECUs, corresponding to 18.18% of the corpus and is directly associated with the class 5. The most common words and significant of these texts segments are: physician, provider, nurse, care, primary, multidisciplinary, prevention and examination ( $p < 0.0001$ ), derived predominantly from articles 09, 21, 26 and 27 in order of significance.

Smoking and alcohol are the main exogenous factors associated with increased likelihood of acquiring oral cancer. People with 40 years, smokers and those with ill-fitting dentures should avoid consuming those agents and to submit at constantly clinical examination of the mouth by a health professional.

### **Class 5. Screening for oral cancer to reduce the prevalence**

Class 5 features 19 ECUs, corresponding to 28.79% of the corpus and is directly associated to class 4. The most common words and significant of these texts segments are: oral, knowledge, screening, mortality, health, rate, cancer, reduce morbidity and level ( $p < 0.0001$ ), derived predominantly from articles 24, 15, 20, 11, 13, 24, 25 and 23 in order of significance.

The National Cancer Institute denominates oral cancer, lip and the oral cavity cancer (oral mucosa, gums, hard palate, oral tongue and floor of the mouth). The most common oral cancer is the lip, which are mainly prevalent in white people. The main risk factors for oral cancer are tobacco and alcohol consumption.<sup>34</sup>

In the Brazilian context, the IBGE data in 2003, shows that that a large portion, 18.4% of the population between 10 and 14 years, never have been or never visited the dentist. The incidence rates and mortality from oral cancer predominate in the South and Southeast of Brazil. The Rio Grande do Sul has 14.25 cases per 100,000 inhabitants<sup>35, 36, 37</sup>.

In 2012, the National Cancer Institute - INCA estimated 14,170 new cases of oral cancer in Brazil, corresponding to an estimated risk of 10 new cases per 100,000 men and 4 new cases per 100,000 women.<sup>38</sup>

Studies carried out in Iran indicate that the long delay in the diagnosis of oral cancer is due to the delay of professional dentists, general practitioners, and other health



professionals who did not consider oral cancer as a differential diagnosis. Delay in diagnosis and treatment enhances tumor diagnosis in the discovery phase.<sup>16</sup>

With the increased prevalence of many types of cancers, you hear a change in the morbidity profile of the population. The American Cancer Society, shows that in developed countries, the incidence rate is higher than in developing and compared to poor countries, the rate is doubled.<sup>27</sup>

The dental care service may be influenced by socioeconomic and psychosocial factors.<sup>7</sup> The perception of oral health can influence oral health decisions and use patterns of health care utilization associated with clinical and socioeconomic conditions.<sup>19</sup>

An North American study estimated that neoplasms, such as carcinoma of oral squamous cell (OSCC), affected more than 36,000 Americans in 2011, resulting in over 7,000 deaths. The sequelae of tumors in the mouth lead the patient to face major functional and aesthetic sequelae due to the loss of essential tissues and thus decrease their quality of life.<sup>6</sup>

The quality of life of patients with oral cancer is impaired, given that some surgical procedures necessary to remove the tumor may lead to a significant disability, including facial deformity, loss of hard and soft tissue, impaired speech, swallowing and chewing.<sup>33</sup>

These complications have a significant impact on the functions of the patient, including the basic need to eat, drink or speak. Pain is also often associated with these oral complications and can lead to increased need for narcotics, increased hospital stay and increased risk of death for systemic infections.<sup>17</sup>

The highest incidence of cancers is found in India, Australia, Brazil, France and South Africa and predominantly in males.<sup>1</sup> What justifies the existence of many studies in these countries.

The basic oral hygiene is of great importance in dental care prior to and during cancer therapy, among them, stands out preventive measures for non-proliferation of fungi and bacteria in the oral region of the patient. Treatments using mouthwashes, saline solution or sodium bicarbonate has long been considered a good basis for oral hygiene hospital patient receiving this treatment.<sup>9</sup>

Oral complications in cancer patients are common and it is estimated that affects 80% of patients (Oral Complications of Chemotherapy and Head). In an oral cancer screening study showed that the lack of knowledge on dental problems is a primary risk factor. The study showed that patients who do not have the habit of taking care of oral health do not associated signs and symptoms with primary cancer.<sup>13</sup>

## CONCLUION

Oral cancer is still considered a serious disease in Brazil and worldwide. Despite advances in treatment, the mortality rate is high.

The prevention and treatment of oral disease are a condition for the patient diagnosed with oral cancer have more extensive lesions, more aggressive therapies and bad prognostic, hindering their rehabilitation and subsequent quality of life.

There is need for greater investment in research related to oral cancer to the multidisciplinary health team has updated knowledge to prevent and treat the disease early, through public policies screening for oral cancer and decreasing of the prevalence.

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