REVIEW

Oral cancer, smoking and public health policies in Brazil: a brief review

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Abstract

This study, conducted through a literature review, aimed to elaborate on oral cancer, smoking and coping with these two diseases by public health policies in force in Brazil. According to the Brazilian National Cancer Institute (INCA), oral cancer is among the most frequent diseases in the country, and if detected at early stages, has a high rate of survival when compared to other types of disease. INCA estimates show that there is a tendency for disease progression, nearly doubling the number of cases from 2005 to 2020, which constitutes a challenge not only to advances in science and technology but to the continuity of higher incidence in countries of lower socioeconomic level, reinforcing the need to work on social determinants. According to the literature reviewed, smoking, among the risk factors for oral cancer, is one of the most potent carcinogens known, with the aggravating factor that the patient voluntarily introduces the carcinogen into their body. The correlation between these two chronic diseases justifies the concern of public health and the dental profession both to deter the progression of these previously established diseases and to reduce the incidence of cases.

Keywords: health promotion, mouth neoplasms, public health, risk factors, smoking.

INTRODUCTION

Cancer is a chronic degenerative disease and a serious and growing public health problem[1]. Global estimates show an increase in the prevalence of the pathology. In 2005, cancer accounted for 7.6 million deaths, or 13% of all deaths in the period. Over 70% of cases occurred in low or middle income countries. It is estimated that in 2020 the number of new cases per year will be approximately 15 million, of which 60% of these new cases will occur in developing countries[2].

Oral malignancies appear as the seventh type of malignancy (excluding cases of non-melanoma skin cancer). The rates of incidence and mortality of oral cancer in Brazil are higher compared to those found in India, Pakistan, Singapore, the United States, Canada and France, and the increasing incidence of this disease in recent decades is apparently associated with high consumption of alcohol and tobacco[3].

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Narvai and Frazao[4], referring to the disease whose lesions are located in the oral cavity, report that cancer presents a singularity: it kills. They also add that this pathology requires an urgent solution, as 83% of patients were in advanced stage of disease at diagnosis, and of those, 26% had no therapeutic option.

Smoking, among the risk factors for oral cancer, is one of the most potent carcinogens known, with the aggravating factor that the patient voluntarily introduces the carcinogen into their body.

Currently, smoking is widely recognized as an epidemic disease resulting in nicotine dependence within a group of mental and behavioral disorders due to use of psychoactive substances according to the Tenth Revision of the International Classification of Diseases (ICD-10)[5]. Continuous exposure to nearly 4,720 toxic substances means that smoking is a causal factor of approximately 50 different diseases, especially cancer[6].

Brazil has one of the highest rates of oral cancer in the world and estimates indicate that there is a tendency for the advancement of the disease, which creates challenges to advances in science and technology, as countries with the highest incidence levels continue to be from the lower socioeconomic levels, reinforcing the need to work on social determinants of the disease. The

correlation between these two chronic diseases, oral cancer and smoking, justifies the concern of public health in the different spheres of government, globally to locally, as well as the dental profession to not only deter the progression of these previously established diseases, but also decrease the incidence of cases.

These data are in themselves sufficient to justify carrying out such research.

Oral cancer

Oral cancer is a term that includes cancers of the lip and oral cavity (buccal mucosa, gingiva, hard palate, tongue and the floor of the mouth). Lip cancer is more common in Caucasians and has far greater occurrence in the lower lip than the top. Cancer in other regions of the mouth mainly affects smokers and the risks increase when the smoker is also alcoholic.

The characteristics of lesions suspected of malignancy are leukoplakia (smooth, rough or warty), which do not disappear after the elimination of chronic irritants, actinic cheilitis, erythroplakia and lichen planus. Induration may be present, i.e., the lesion and surrounding tissue is firm to the touch and exhibit a rapid growth rate.

The main symptom of this cancer is the appearance of mouth sores that do not heal in a week. Other symptoms are superficial ulcerations less than two centimeters in diameter, painless (may or may not bleed) and whitish or reddish lips or oral mucosa. Difficulty speaking, chewing and swallowing, and severe weight loss, pain and the presence of neck lymphadenopathy are signs of mouth cancer in advanced stage[7].

In relation to carcinogenesis, until some time ago little was known about the genetic mechanism. Today, with advances in molecular biology, cancer is defined as a genetic disease of somatic cells, which results from the interaction of numerous genes, called oncogenes, with the environment[8]. It is a multistep process in which genetic events lead to the disruption of normal regulatory pathways that control basic cellular functions. Oral cancer occurs as a result of multiple molecular events that are induced by the effects of various carcinogens influenced by environmental factors against a background of genetically inherited resistance or susceptibility[9,10].

The activation of oncogenes is by structural mutation, gene amplification, chromosomal rearrangement or viral infection and is a key step in transforming a normal cell into neoplastic[8]. A study referring to carcinogenesis reported the formation of chromosomal defect: the emergence of a micronucleus resulting in the lysis of a DNA molecule days or weeks after the action of carcinogens. They are acentric chromosomes or chromatid fragments that have not been included within the nucleus after the completion of mitosis. The formation of micronuclei has been used as an intermediate biomarker to assess the preventive effect of chemotherapy protocols or the adverse effects to the oral mucosa[11].

Histological examination of the epithelial lesions points as the source region of the majority of cases, squamous cell carcinoma in particular corresponds to 90-95% of them. This represents an ease in terms of diagnosis, since the manifestations could be recognized in the early stages of onset in many situations. Added is the fact that the mouth is an area of easy access to clinical exam by the professional and self-exam by the patient[12].

The oral cancer patient is usually a patient who has many of these general characteristics: male, over 40 years of age, a chronic smoker and drinker, poor oral hygiene, malnourished or immunocompromised, has poorly fitted dentures or suffering from other chronic irritation of the oral mucosa, and prolonged and excessive consumption of mate-herbal tea (*chimarrão*)[10,13].

In a 2009 study conducted in Juiz de Fora (Brazil) on the factors related to delayed diagnosis of cancer of the mouth and oropharynx, besides the above determinants, it was revealed that 83.8% were smokers, 94.6% consumed alcohol and the occupation exercised by the patients were manual laborers, such as "farm laborer", "truck driver" and "general services". With regard to family income, 54.6% reported incomes of less than minimum wage[14].

Another study reviewing publications on oral cancer, as well as analysis of the variables tobacco, alcohol and tobacco, education, tumor location, clinical staging and treatment also found a positive relationship between this disease and low socioeconomic status[15].

Tobacco

Smoking is an epidemic disease resulting from nicotine dependence and classified by the World Health Organization (WHO) in the group of mental and behavioral disorders due to the use of psychoactive substances[5].

The first scientific evidence about the harms of smoking appeared around 1960. Nicotine is carcinogenic and causes addiction. When absorbed by the lungs, nicotine reaches the brain in nine seconds[16]. Attacks on the oral tissues originate through mechanical injury, by the friction of cigarettes or pipes against the labial epithelium in smoking, through thermal injury, by heat that is transmitted to the epithelium of the lips and through chemical injury, by more than 4,720 carcinogenic substances such as hydrocarbons, volatile nitrosamines, nickel, arsenic and phenols, among others[17].

Smoking triggers or aggravates another 50 different disabling and fatal diseases, accounting for deaths from myocardial infarction, pulmonary emphysema, cerebrovascular disease and cancer, as 90% of cases of lung cancer occur in smokers[16]. Smoking presents serious and widespread hazards to the body and accounts for a substantial increase in public spending.

Regezi, commenting about the etiology of oral cancer, refers to tobacco as being considered the most important predisposing factors for disease[18]. INCA makes it clear that the fight against smoking is also important in preventing this type of cancer. When emphasizing the importance of smoke abstention, the "Ten Tips to Protect Against Cancer" are cited with the first rule being: "Stop smoking! This is the most important rule to prevent cancer[19]".

According to a study by Lolio et al.[20], the results indicate a high prevalence of smoking, predominantly in older men and with lower income and education. However, in the younger age group there is already a high proportion of people who have started smoking. It is known that international efforts have focused on smoking prevention in adolescence.

Smoking is considered a pediatric disease because 90% of smokers began tobacco use before age 19, and 15 years, the construction phase of personality, is the average age of initiation of these young smokers[7]. The major tobacco companies know that young adults who want to try cigarettes have a greater influence on others of the same age group, describing children and young adults as "replenishment reserves" and a major strategic target, should become dependent on cigarettes early on, remaining as a source of profits for at least 25 years. Adding the 25 years that the companies estimate for dependency to the age of first cigarette use, around 15 years of age, we have 40 years of age. It is during this period that negative affects to health appear, among which is oral cancer.

Of the current estimated 1.3 billion smokers in the world, 80% live in developing countries. Each day approximately 100,000 young people start smoking in the world; thus, 80,000 new smokers a day in developing countries[21]. In Brazil, a study conducted by INCA in 2002 and 2003 among students from 12 state capitals found a prevalence of experimentation ranging from 36 to 58% in males and 31 to 55% in females, among the cities[22]. Note that there is little difference in tobacco experimentation when comparing gender.

The impact of smoking on women's health is equally or more harmful as that for men´s health. In addition to heart and lung diseases, common to both genders, there are certain unique peculiarities for women, such as pregnancy, menopause and contraceptive pill use[23].

There is a correlation between smoking, low income and low education levels, in most countries. In China, individuals with no schooling are about seven times more likely to be smokers than individuals who have higher education. In Brazil, this proportion drops slightly, but still is high, reaching five times higher[24].

Nicotine dependence induces many heads of low-income households to use the resources of their already reduced family income for the purchase of cigarettes, which could be devoted to buying food, or for the leisure, health or education of the family. There is the further problem that cigarettes are more economically accessible than some foods.

Due to its toxicity, the total deaths caused by smoking worldwide are about five million a year. In Brazil, the estimates are about 200,000 deaths a year[6].

Public health policies in Brazil: facing oral cancer and smoking

The public health policies for coping with cancer and smoking in Brazil have been developed in parallel and simultaneously over the years. At the same time that domestic laws are created to combat these diseases, Brazil follows the determination of global policies on the subject.

From the 1990s, with the process of structuring the Unified Health Care System (*Sistema Único de Saúde* - SUS), the role of an agency directing cancer control policies in the country fell to INCA. The responsibility of INCA includes national programs for cancer prevention as well as expansion of cancer registries and the expansion of cancer care, through Centers of High Complexity in Oncology (CACONs) [25].

In 2000, the United Nations (UN) adopted the Millennium Declaration, which sets out the Millennium Development Goals (MDGs) to be achieved by member countries by 2015. There are eight goals, all of which can be more easily achieved if there is control of tobacco. Eradicating extreme poverty and hunger, followed by reduction of child mortality, improving maternal health, combat disease and to ensure environmental sustainability are closely linked to tobacco abstinence. Many countries with low or middle income have large pockets of poverty and high rates of smoking, leading to evidence that socioeconomic conditions are conductive to a perpetuation of health consequences, social, environmental and economic consequences for consumption, production and exposure to tobacco smoke.

Another program launched in 2001, the Tobacco and Other Cancer Risk Factors Control Program, considers the continental dimensions of Brazil and the great difficulties due to different regional socioeconomic and cultural views and has developed an essential strategy to disperse cancer prevention throughout the entire country and reach all the population: a decentralization process that uses the SUS management system in partnership with states and municipalities.

In this process, INCA enables the Human Resource Team Coordinators of the states (state and municipal Secretaries of Health and Education), to develop operational and technical coordination/management activities of the program. The latter enable the professionals at their workplaces in health facilities and schools, respectively[26].

The Ministry of Health in 2004 developed the National Policy Guidelines on Oral Health, and the item on the prevention and control of oral cancer, describes the importance of early diagnosis and treatment can be instituted immediately in order to deter disease progression and prevent the emergence of any disability and recurrent damage[27].

A national policy for cancer control (Política Nacional de Atenção Oncológica - PNAO) was created in 2005 with Decree 2439/GM establishing guidelines and instructing the organization of the Oncology Care Network in the states, a joint institutional strategy aimed at overcoming fragmentation of actions and ensure greater effectiveness and efficiency in the control of cancer. Health surveillance, with emphasis on tobacco control, is one of its noted components.

This policy is in line with other policies, such as the national policy for health promotion, proposing the formation of a care model aimed at improving the quality of life by investing in the promotion, protection and restoration of health and increasing coverage with skilled attendance according to the basic principles of SUS: universality, scope and humanization.

Tobacco Control Programs are aimed at reducing morbidity and mortality from smoking-related diseases, by reducing rates of smoking and eliminating exposure to secondhand tobacco smoke. The program works with educational, cognitive-behavioral actions associated with global legislation[28].

It is considered that cultures and habits are susceptible to change only in the long run. Therefore, these actions use channels to reach the community on an ongoing basis and within the reality of its routine. Thus, by conducting systematic activities in subprograms targeted at workplaces, schools and health facilities, the subject is inserted into the routines of these environments.

Brazil is a pioneer in the fight against smoking and signed the Framework Convention on Tobacco Control (FCTC), which is the first international public health accord in which signatory countries agree to make efforts to achieve predefined goals. The main objective of the FCTC, which was ratified in November 2005, is to preserve the present and succeeding generations from the health, social, environmental and economic consequences of consumption and exposure to tobacco smoke[29].

Laws to protect against the risks of exposure to secondhand tobacco smoke, restricting access to tobacco products, youth protection, treatment and support to smokers, restriction of advertising and sponsorship of tobacco products, financial restrictions to tobacco growing and funding for tobacco control actions in SUS are examples that Brazil has a collection of the strongest laws in the world pertaining to the control of tobacco use[28].

The ban on advertising tobacco products in magazines, newspapers and television has been in effect in Brazil since December 2000[30] and is widely recognized as an effective measure to reduce consumption. More than 15 years at the forefront of the tobacco control program has given INCA a national reference status for the preparation of technical reports and explanatory memorandum involving different aspects of tobacco control, supporting processes and legislation. This has enabled INCA to influence developments in intersectoral policies, especially in the legislative and economic areas[31].

The Brazilian states of Rio de Janeiro, São Paulo, Santa Catarina, Pernambuco and Piauí among others are mobilizing, and increasingly looking to raise awareness to promote smoke-free environments and also anti-smoking laws. Curitiba, even before state (Paraná) legislation, will put an anti-smoking law[32] into effect, which prohibits the use of cigarettes and other smoking products in indoor environments for collective use by the public. In Paraná, an example of what is happening in other localities and regions, also established a law in September 2009[33] that has regulated the creation of smoke-free outdoor public environments.

FINAL CONSIDERATIONS

In the literature surveyed, the concern was evident of public health policies to deter the advance of cancer and smoking, two chronic diseases where the latter is the main risk factor for the first. Brazil has been given the recognition of international leadership in this area most notably for the pioneering work in developing actions for tobacco control, as being a UN-member country and a signatory to the FCTC, and also through laws that regulate and protect against exposure to tobacco through strong and comprehensive public policies of confrontation (American Cancer Society-ACS).

An important characteristic found is that both affect the fragile socioeconomic population, which shows that there is a greater need for information for that population. Taking into account that there is a high number of smokers in the Brazilian population and the majority of patients with oral cancer seek treatment already in advanced staging, investment in prevention is of paramount importance, in addition to being less expensive. One major point is that there is need for an intense attack on smoking since it is an entirely preventable risk factor that triggers various diseases, including oral cancer. The dentist, as a health care professional, should be alert to signs and symptoms of oral cancer for early diagnosis as well as understand the meanings of the relationship of the smoker with the cigarette to adequately address the patient, who requires more than just simple counseling by the professional.

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