

Analysis of Mouth Cancer Incidence Estimates in Brazil and Paraíba State (2003 - 2017)

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Abstract

Objective: To analyze the estimated incidence of oral cavity cancer in Brazil and Paraíba, published by INCA, from 2003 to the 2016/2017 biennium.

Methods: A bibliographic and documental research was conducted based on data obtained from Cancer Estimation documents in Brazil, published by INCA, from 2003 to 2016/2017. A comparative analysis of the incidence of oral cavity cancer was performed in Brazil and Paraíba, correlating data from male and female genders, as with primary anatomical sites.

Results: In the last 15 years, in Brazil and the Northeast region, the oral cavity was one of the ten anatomical locations with the highest number of new estimated cancer cases, occupying the seventh position. In Paraíba, there was a 433.33% increase in incidence estimates by changing from 60 to 260 new cases most striking the male population. Within the most incident types of cancer except non-melanoma skin, the oral cavity became, in the biennium 2014-2015, the fourth location with the highest estimated number of cases, surpassing other sites such as cervix, lung, colon, and rectum.

Conclusion: The number of new estimated cases of oral cavity cancer increases each year, both in Brazil and Paraíba. Although the different proportion between men and women is decreasing, there is still a larger number of new cases among men.

Keywords: Incidence, epidemiology, oral malignancies, carcinomas.

INTRODUCTION

The Brazilian epidemiological scenario has undergone enormous changes to the logo of time and has brought the reality of health/disease into the country distributed in a transparent environment that favors the knowledge of major health problems and the impacts on society (MELO et al., 2012).

From the estimates made by the National Cancer Institute (INCA), it is possible to identify statistical data that show alarming results of new cases of cancer. Through these results, INCA seeks to promote

health education and encourage national, state and municipal public managers to work through effective mechanisms, a proposal that aims primarily at prevention even before the onset of the disease.

Currently, cancer is arguably considered a public health problem (INCA, 2016). Searching for ways to prevent, early diagnosis and treat the disease is the basic link in the search for control of cancer. These “Estimates” assist in the planning of control actions and are made by entities responsible for combining relevant information to the result of the number of new cases.

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INCA, the agency responsible for disseminating data on "Cancer Incidence Estimates in Brazil" since 1995, assists in the foundation of methods that guide Brazilian cancer health by outlining strategies for planning disease prevention and control programs. The result of the estimated information released by INCA is produced by the Prevention and Surveillance Coordination (CONPREV) based on Population-Based Cancer Records (RCBP), the Mortality Information System (SIM) and the Ministry of Health (MS), centralized nationally by the Department of Health Surveillance (SVS / MS). INCA takes into consideration the intraoral, oropharyngeal and salivary gland anatomical regions to estimate the number of new cases of oral cavity cancer according to ICD-10 (C00C-10) (MELO et al., 2012).

The estimate of the 2016-2017 biennium for Brazil, released by INCA, shows that about 600,000 new cases of cancer were estimated in these years, being oral cavity cancer among the five largest types of cancer in men (5, 2%) and not found among the ten most frequent in women. This total number of new cases breaks down to 11,140 new cases of oral cavity cancer in men and 4,350 in women. Also, estimates of oral cancer present about 260 new cases in the state of Paraíba and 50 in João Pessoa. These data are the basis of all actions in planning to fight the disease (INCA, 2016).

Given the above, it is necessary to study and analyze the estimates based on historical series in order to promote adequate knowledge about the incidence of cancer in the oral cavity, and the numbers that indicate the evolution of the disease in different states and regions of Brazil, as well as gender differences and other primary locations, helping to organize policies that contribute to the planning of prevention, diagnosis and treatment programs.

MATERIAL AND METHODS

Study Design

This study is documentary research, with secondary data obtained from the Cancer Estimation documents in Brazil, published by INCA.

Data Collection Procedures

According to MELO et al. (2012) the methodology used in the Estimates has undergone several modifications over the years, however, currently occurs by dividing the total of new cases registered in a given time interval

by the sum of deaths, provided by SIM, referring to the same place and period, always in places where there is RCBP. To this end, epidemiologists, statisticians, and specialists have worked to approximate the actual incidence of cancer in each state.

To carry out this research, there will be analyzed the historical series of estimations about cancer evolution and incidence, published by INCA, from 2003 to 2016/2017 biennium. The following variables will be analyzed using descriptive and analytical statistics:

1. The number of new cases of cancer and the gross incidence rate per 100 thousand inhabitants foreseen for Brazil, in the period between 2003 and 2016, besides the comparative analysis of this incidence between the Northeast Region and other regions; Paraíba State and other federative units; João Pessoa and other capitals of the country.
2. Comparative analysis of the incidence of oral cavity cancer with the other primary locations in the same period, also considering the differences between the Northeast and other regions; Paraíba State and other federative units; João Pessoa and other capitals of the country.
3. Comparative analysis of the incidence of oral cavity cancer in males and females over the same period, considering the differences between the other primary locations; the differences between the Northeast Region and other regions; Paraíba State and other federative units; João Pessoa and other capitals of the country.

RESULTS AND DISCUSSION

Regarding the most estimated types of cancer, between 2003 and 2017, except for non-melanoma skin, the oral cavity has always been among the ten most affected anatomical locations in the Brazilian population, occupying the seventh position during all these years (Table 1).

Analyzing the male population, oral cavity cancer always occupied the fifth position among the most affected sites. In the same period, among women, oral cavity cancer ranged from sixth to seventh, being the sixth most prevalent in 2003; the seventh in the period from 2005 to 2011; returned to the sixth position in 2012 and 2013; and went to the seventh position between 2014 and 2017.

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Table 1. Most incident cancer types estimated between 2003 and 2017, except non-melanoma skin, in the Brazilian population. Source: INCA.

LOCATION	Total Brazil - Case (Gross Rate)							
	2003	2005	2006/2007	2008/2009	2010/2011	2012/2013	2014/2015	2016/2017
Prostate	35.240(40,49)	46.330(51,12)	47.280(51,41)	49.530(52,43)	52.350(53,84)	60.180(62,54)	68.800(70,42)	61.200(61,82)
Female breast	41.610(46,65)	49.470(52,93)	48.930(51,66)	49.400(50,71)	49.240(49,27)	52.680(52,50)	57.120(56,09)	57.960(56,20)
Cervical Cancer	16.480(18,32)	20.690(22,14)	19.260(20,31)	18.680(19,18)	18.430(18,47)	17.540(17,49)	15.590(15,33)	16.340(15,85)
Trachea, Bronchus and Lung	22.085(25,13)	25.790(28,19)	27.170(29,23)	27.270(28,58)	27.630(28,19)	27.320(27,98)	27.330(27,54)	28.220(28,03)
Colon and rectum	20.075(22,69)	26.050(28,29)	25.360(27,09)	26.990(28,11)	28.110(28,53)	30.140(30,69)	32.600(32,68)	34.280(33,94)
Stomach	20.640(23,48)	23.145(25,35)	23.200(24,95)	21.800(22,85)	21.500(21,95)	20.090(20,62)	20.390(20,60)	20.520(20,41)
Oral cavity	10.635(12,15)	13.880(15,17)	13.470(14,49)	14.160(14,88)	14.120(14,40)	14.170(14,59)	15.290(15,46)	15.490(15,48)
Leukemia	7.380(8,36)	9.190(9,99)	9.550(10,27)	9.540(9,96)	9.580(9,73)	8.510(8,70)	9.370(9,44)	10.070(10,01)
Melanoma skin	4.370(4,86)	5.820(6,31)	5.760(6,08)	5.920(6,12)	5.930(5,96)	6.230(6,38)	5.890(5,88)	5.670(5,62)

The incidence of new cases of oral cavity cancer in Brazil, according to estimates between 2003 and 2017, went from 10,635 to 15,490, which means an increase of 145.65% of new cases. Among men, the increase was 143.74%, increasing from 7,750 to 11,140. For women, the increase was 150.78%, from 2,885 to 4,350 new cases (Figure 1).

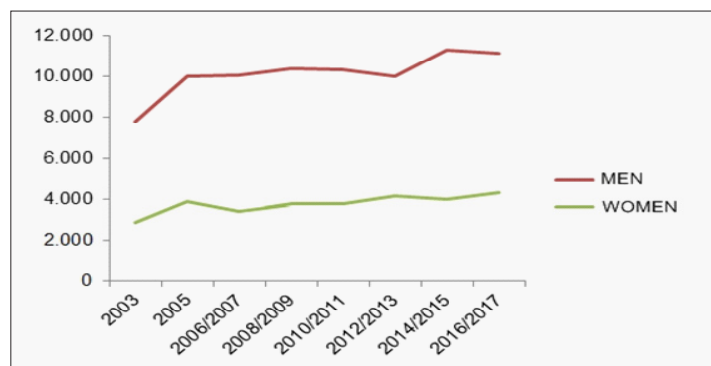


Fig 1. Estimates of new cases of oral cavity cancer, between 2003 and 2017, in Brazil, according to gender. Source: INCA.

The scenario presented by the northeast region does not differ from the Brazilian scenario, the most common types of cancer in the last 15 years, except non-melanoma skin, oral cavity cancer ranked seventh (Table 2). However, when analyzing only male data, the oral cavity was the fourth most affected by cancer in the years 2003 to 2015, currently occupying the fifth position. The females, at the same time, already occupied the sixth position (in the years 2003 to 2005), seventh (2006 and 2007), then resumed the sixth (2008 to 2017).

Table 2. Estimated most incident cancer types between 2003 and 2017, except non-melanoma skin, in northeastern Brazil. Source: INCA.

LOCATION	Total Northeast - Case (Gross Rate)							
	2003	2005	2006/2007	2008/2009	2010/2011	2012/2013	2014/2015	2016/2017
Prostate	4.270(17,69)	8.460(33,86)	8.730(34,53)	9.820(37,97)	11.570(43,77)	11.550(43,08)	12.930(47,46)	14.290(51,84)
Female breast	5.270(21,02)	7.090(27,23)	7.120(27,16)	7.360(28,38)	8.270(30,11)	8.970(31,90)	10.490(36,74)	11.190(38,74)
Cervical Cancer	3.570(14,16)	4.700(18,09)	4.410(16,75)	4.720(17,58)	5.050(18,42)	5.050(17,96)	5.370(18,79)	5.630(19,49)
Trachea, Bronchus and Lung	2.010(8,19)	3.100(12,22)	3.350(12,99)	3.630(13,81)	3.950(14,75)	3.890(14,16)	4.280(15,41)	4.790(16,99)
Colon and rectum	1.450(5,90)	2.390(9,43)	2.450(9,50)	2.680(10,18)	3.040(11,25)	3.280(11,97)	3.900(14,00)	4.470(15,82)
Stomach	2.170(8,87)	3.550(14,03)	3.680(14,31)	3.840(14,63)	4.280(15,90)	3.940(14,58)	4.610(16,64)	4.880(17,40)
Oral cavity	1.230(5,09)	2.100(8,30)	2.170(8,43)	2.500(9,55)	2.810(10,37)	2.550(9,40)	3.020(10,88)	3.070(10,97)
Leukemia	970(3,99)	1.760(6,88)	1.820(7,12)	1.900(7,29)	2.070(7,66)	1.840(6,76)	2.080(7,55)	2.280(8,12)
Melanoma skin	200(0,73)	420(1,63)	450(1,67)	450(1,75)	540(2,03)	610(2,25)	770(2,77)	940(3,38)

In the present study, it is observed that cancer is the second leading cause of death from disease in Brazil, and since 2003 the oral cavity was one of the most affected anatomical locations with cancer, except non-melanoma skin, it always being in the seventh position. These data corroborate the results presented by Dedivitis et al. (2004), where oral cavity cancer was the sixth most common cancer in the

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world and the most common in the head and neck region, excluding skin cancer. According to Alvarenga et al. (2008), developing countries, such as Brazil, have high mortality rates and prevalence compared to developed countries. Casati et al. (2012) also discuss this issue, explaining that socioeconomic factors can be considered as conducive to cancer development. The authors explain that generally, an economically underprivileged population may be more vulnerable to risk factors. Besides, this population generally resides in areas with lower quality of health services

and difficult access, which further aggravates the difficulties in diagnosis and treatment, interfering with mortality.

Regarding the state of Paraíba, oral cavity cancer was the sixth most prevalent in the period from 2003 to 2005; it occupied the seventh position in the years 2006 and 2007; the fifth in the period from 2008 to 2013, becoming the fourth most prevalent location in 2014. It currently ranks sixth among the most affected anatomical locations (Table 3).

Table 3. Estimated most incident cancer types, between 2003 and 2017, except non-melanoma skin, in the state of Paraíba. Source: INCA.

LOCATION	Paraíba Total - Case (Gross Rate)							
	2003	2005	2006/2007	2008/2009	2010/2011	2012/2013	2014/2015	2016/2017
Prostate	120(7,33)	280(16,20)	330(18,87)	550(30,63)	790(43,69)	940(50,59)	930(49,45)	1.040(54,49)
Female breast	270(15,09)	350(18,68)	350(18,97)	490(25,78)	550(28,68)	640(32,41)	750(37,62)	800(39,50)
Cervical Cancer	130(7,15)	150(8,24)	160(8,40)	230(12,23)	300(15,51)	320(15,96)	290(14,43)	330(16,21)
Trachea, Bronchus and Lung	100(5,70)	160(8,82)	180(9,26)	180(9,84)	220(12,04)	240(12,18)	280(14,38)	230(16,87)
Colon and rectum	60(3,51)	110(6,19)	120(6,77)	150(8,24)	180(9,66)	200(10,56)	230(11,72)	270(13,62)
Stomach	100(5,68)	170(9,85)	200(11,06)	250(13,69)	320(17,02)	340(18,01)	370(19,03)	410(20,70)
Oral cavity	60(3,54)	110(6,29)	130(7,15)	190(10,36)	240(13,17)	250(13,14)	290(15,31)	260(13,81)
Leukemia	60(3,51)	110(6,23)	130(7,33)	150(8,37)	170(8,96)	150(8,01)	180(9,13)	180(9,34)
Melanoma skin	10(0,46)	20(1,36)	30(1,57)	30(1,95)	40(2,33)	50(2,41)	60(2,76)	70(3,43)

Analysis performed only in males showed that oral cavity cancer was always among the four most affected primary locations, being in fourth position (2003 to 2007), third (2008 to 2015) and currently in the fourth position. (2017). Regarding the estimate for females, oral cavity cancer ranged from seventh position (2003 to 2007); fifth position (2008 to 2011), in 2012 was in the sixth position, remaining until the

present day (2017).

There was a considerable increase in the incidence of oral cavity cancer in Paraíba, changing from 60 to 260 new cases, an increase of 433.33%. Among men, the increase was 375%, going up from 40 to 150 cases, and for women it was 550%, changing from 20 to 110 new cases (Figure 2).

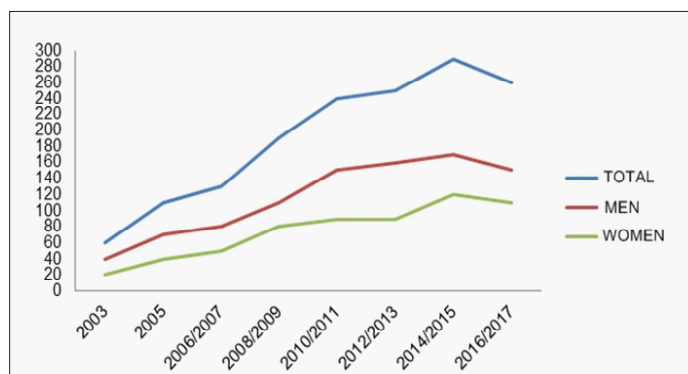


Fig 2. Estimates of new cases of oral cavity cancer in Paraíba, between 2003 and 2017, according to gender. Source: INCA.

In a total of new cases of oral cavity cancer estimate for Paraíba's population, most reach the male gender. This result is compatible with the study performed by Carvalho, Soares, and Figueredo (2012), who collected data from medical records of patients with oral cavity malignancies in a

referral hospital in Campina Grande, Paraíba, between 1999 and 2008. In this study, it was observed that most neoplasms also affected the male gender. The same happened with the study by Meireles and Costa (2006), which presented a prevalence of 64.5% of neoplasms in males.

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As for João Pessoa, in 2003, 30 new cases of oral cancer were estimated (20 men and 10 women). From 2005 to 2007, 40 cases were estimated (20 men and 20 women). Between 2008 and 2017, the estimates of oral cavity cancer remained the same,

in a total of 50 cases, with men being more affected than women. Between these years, 2010-2011 and 2012-2013, no estimates were published for women, the only information that there would be less than 15 cases (Table 4).

Table 4. Estimates of new cases of oral cavity cancer in João Pessoa, between 2003 and 2017, by gender. Source: INCA

YEAR	JOÃO PESSOA		
	MEN	WOMEN	TOTAL
2003	20	10	30
2005	20	20	40
2006/2007	20	20	40
2008/2009	30	20	50
2010/2011	40	**	50
2012/2013	40	**	50
2014/2015	30	20	50
2016/2017	30	20	50

*Numbers rounded to 10 or multiples of 10.

** Less than 15 cases.

It is of fundamental importance to consider the fact that, although the incidence estimates in Paraíba have increased in the last 15 years by approximately 433.33%; In the capital, João Pessoa, the increase did not reach such a level in comparison to the whole state. This indicates that the interior of the state has presented a larger number of cases.

The absolute number of cases does not allow comparison between states and regions of the country. For such analysis, the gross or adjusted incidence rates per 100 thousand inhabitants are more indicated. In Paraíba, this gross rate went from twenty-second to the tenth state with the highest incidence of oral cancer, which is the sixth (its apex) in the biennium 2014/2015. In the case of men, the state went from 2.22 new cases in 2003 to 9.25 in 2015, and today it has a value of 8.15. The state, which already occupied the twenty-second position in 2003, is currently the fourteenth state of the federation with the highest incidence of new cases per 100,000 inhabitants. As for women, the rate went from 1.32 (2003) to 6.06 (2015) and currently has a value of 5.66, placing Paraíba in the third position, and in the previous biennium, it was the second state with a higher estimated incidence of cases in women.

When compared to other capitals, João Pessoa presented one of the quite significant gross rates. It is noticed that João Pessoa was proportionally among the ten capitals of the country with the highest number of new cases of oral cavity cancer. Among men, the figure

changed from 5.96 (2003), rose to 12.97 (2010/2011) and fell to 9.42 (2017) (fourteenth position). For women, it started at 2.97, reached a peak of 6.02 (2005) and for the period 2016-2017 is equal to 5.79. In this last estimate, João Pessoa stood out as the fifth capital of the country with the largest number of new cases of oral cavity cancer for women and in the first position among the capitals of the Northeast.

Epidemiological data show the relationship between oral cavity cancer and its risk factors such as alcoholism, smoking and sun exposure (INCA, 2016). These carcinogenesis promoters and initiators, which, in synergism with supporting factors, highlighting poor hygiene, poorly adapted prostheses, immunosuppression, viral infections by papilloma and herpesvirus I, and nutritional deficiencies, potentiate the induction and acquisition of this neoplasia (MELO et al. 2010). Knowledge of these risk factors forms the basis for early diagnosis, treatment in early stages, and especially effective disease prevention.

These types of research define a population profile, which helps guide managers (national, state and municipal), researchers and health professionals to formulate public policies that promote actions to always guide the population on the risk of these factors, such as tobacco consumption; These actions seek to further reduce the estimates of oral cavity cancer incidence and, consequently, seek to improve the population's quality of life.

CONCLUSION

It was possible to verify from the Cancer Incidence Estimates, released by INCA between 2003 and 2017, that, in Brazil and the Northeast region, oral cavity cancer is among the seven anatomical sites most affected by this neoplasia, increasing each year. It was concluded that despite the decrease in the proportion of cases between men and women, a higher number of cases among men is still prevalent.

In Paraíba, oral cavity cancer, which was once the fourth most affected site, today is the sixth most affected anatomical location. Compared to other federal units, Paraíba is the tenth state with the largest number of new cases of this neoplasm; Joao Pessoa's capital is today the twelfth among all the other capitals, but, depending on the individual's gender, it becomes one of the five capitals with the greatest involvement of oral cavity cancer, equaling the cases of colon and rectum cancer.

Given the data obtained by this research, it is noted the need to seek new methods for the reformulation and/or creation of public policies to change the perception of society regarding the risk factors of oral cavity cancer in Brazil and the Paraíba. Especially, to allow improvement in the quality and access to health services, in addition to reducing the number of new cases, helping in the early diagnosis and improving the treatment and prognosis of patients.

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