

MORTALITY FROM ORAL CANCER IN THE BAIXADA LITORÂNEA REGION OF RIO DE JANEIRO: A TIME SERIES ANALYSIS (1979–2022)

MORTALIDADE POR CÂNCER ORAL NA BAIXADA LITORÂNEA DO RIO DE JANEIRO: ANÁLISE DE SÉRIE TEMPORAL (1979–2022)

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ABSTRACT

Oral cancer constitutes one of the most relevant diseases in the Brazilian public health scenario due to its high incidence and mortality rates. This study aimed to evaluate mortality from oral cancer in the Baixada Litorânea region of Rio de Janeiro. A retrospective temporal analysis was performed using secondary data from the Mortality Information System. Individuals of all age groups diagnosed with oral cancer (ICD C00 to C06) from 1979 to 2022 were included. The total number of deaths and mortality rates by topography, age group, and year were collected, and a descriptive analysis by sex was performed. This study identified 345 deaths from oral cancer in the Baixada Litorânea region during this period. Deaths occurred more often in men (a 3:1 ratio) and in other parts of the mouth. In both sexes, deaths predominantly occurred among adults; however, women died at older ages (80 years or older) than men (50-59 years). For all topographies, men showed higher mortality rates, especially for malignant neoplasms of other parts of the mouth (a rate of 0.91/100,000 men). Mortality from oral cancer in the Baixada Litorânea region increased, with the highest number of cases recorded from 2009 to 2018. Regarding sex, age, and location, patterns resembled those of the Brazilian population.

Keywords: Oral cancer; Mortality; Public health; Health Information Systems; Epidemiology.

RESUMO

No Brasil, o câncer de boca é uma das doenças mais relevantes no cenário de saúde pública, devido às altas taxas de incidência e mortalidade. O objetivo deste estudo é avaliar a mortalidade por câncer de boca na Baixada Litorânea do Rio de Janeiro. Foi feita uma análise temporal, retrospectiva, com dados secundários, obtidos do Sistema de Informação sobre Mortalidade. Foram incluídos indivíduos de todas as faixas etárias, com diagnóstico de câncer de boca (CID C00 a C06), entre 1979 e 2022. Foram coletados o número total de mortes e as taxas de mortalidade por topografia, faixa etária e ano, e realizada análise descritiva por sexos. Foram identificadas 345 mortes por câncer de boca na Baixada Litorânea nesse período. Os óbitos foram mais frequentes no sexo masculino, em uma proporção de 3:1 e na topografia de outras partes da boca. Em ambos os sexos, os óbitos ocorreram majoritariamente em adultos. Entretanto, com idade mais avançada nas mulheres (80 anos ou mais) em comparação com os homens (50-59 anos). Para todas as topografias, o sexo masculino apresentou taxas de mortalidade superiores, com destaque para as neoplasias malignas de outras partes da boca com taxa de 0,91/100.000 homens. A mortalidade por câncer de boca na Baixada Litorânea do Rio de Janeiro apresentou ascensão, com maior número de casos registrados entre 2009 e 2018. No que se refere ao sexo, idade e topografia, foram observados padrões similares aos da população brasileira.

Palavras-chave: Câncer oral; Mortalidade; Saúde pública; Sistemas de Informação em Saúde; Epidemiologia.

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INTRODUCTION

Oral cancer is one of the most prevalent malignancies in the head and neck region (1). Estimates suggest 12,260 new cases of oral cancer in Brazil a year from 2026 to 2028 (2). This disease mainly affects men aged 50 years or older due to risk behaviors (such as smoking and excessive alcohol consumption) and sun exposure, specifically for lip cancer (3).

According to data from the World Health Organization, oral cancer constituted the tumor with the 15th highest mortality rates in 2022 worldwide, causing 188,438 and 130,808 deaths in men and women, respectively (4). Brazil witnessed 133,319 deaths due to this type of cancer from 1997 to 2023 (5). Despite advances in the development of treatments, survival rates remain low, and may show values below 50%, increasing the number of associated deaths. Diagnoses that mostly occur in advanced stages of the disease worsen this scenario (6). Patients with early-stage disease have five-year survival rates above 80%, whereas those with advanced disease have a less favorable prognosis—with survival rates less than 50% (6,7).

Thus, public awareness of risk factors is essential to reduce the incidence of oral cancer. Moreover, knowledge of signs and symptoms influences individuals' health-seeking behavior, which influences professionals' opportunity to make diagnoses (8,9). Hence, by performing thorough clinical examinations and finding potentially malignant oral disorders, dentists can diagnose oral cancer early, directly influencing individuals' treatment and prognosis (10,11).

Despite the large number of publications on oral cancer, data on this disease in the Baixada Litorânea health region are scarce. The only study to date on oral cancer in this region has exploratorily and quantitatively evaluated primary health care dentists' knowledge (10). Thus, understanding the mortality pattern of oral cancer in Baixada Litorânea will support planning efforts targeting this population. Therefore, this study aimed to evaluate mortality from oral cancer in the Baixada Litorânea region of Rio de Janeiro.

METHODOLOGY

A retrospective time series was used to evaluate oral cancer mortality in the Baixada Litorânea health region from 1979 to 2022. Secondary data from the Online Atlas of Mortality (information from death certificates is included in this mandatory document in the Brazilian territory) (12) were used. The municipalities that make up Baixada Litorânea

Health Region were included, namely: Araruama, Armação de Búzios, Arraial do Cabo, Cabo Frio, Casimiro de Abreu, Iguaba Grande, Rio das Ostras, São Pedro da Aldeia, and Saquarema.

The data were collected in November 2024. The records of individuals of all age groups who were diagnosed with oral cancer—classified as C00, C01, and C02-C06 (C00 - malignant neoplasm of the lip, C01 - malignant neoplasm of the base of the tongue, C02 - malignant neoplasm of other and unspecified parts of the tongue, C03 - malignant neoplasm of the gingiva, C04 - malignant neoplasm of the floor of the mouth, C05 - malignant neoplasm of the palate, and C06 - malignant neoplasm of other and unspecified parts of the mouth) according to the International Classification of Diseases (ICD)—were included in this study.

The total number of deaths was collected according to topography (ICD C00-06) and age group (0-4, 5-9, 10-14, 15-19, 20-29, 30-39, 40-49, 50-59, 60-69, 70-79, and over 80 years). Mortality rates by topography in the specified period (adjusted by the world population) were also gathered. The data were descriptively analyzed for women and men and for the total population (both sexes). They are described in tables and graphs.

RESULTS

The data from the Mortality Information System showed 345 deaths from oral cancer in the Baixada Litorânea health region municipalities from 1979 to 2022, of which 261 (75.7%) occurred in men and 84 (24.3%) in women, a 3:1 ratio between men and women.

Considering both sexes and all malignant neoplasms of the mouth, 2015 to 2020 showed the highest number of deaths (19 each). This study found an increase in the number of deaths over the years. Malignant neoplasm of other and unspecified parts of the mouth (C06) occurred most often, followed by malignant neoplasm of other and unspecified parts of the tongue (C02) for the isolated and grouped sexes. When ICD C01 and C02 were analyzed together, the tongue became the most common site (140 deaths). In contrast, malignant neoplasms of the lip (C00) occurred the least (only five deaths). Except for ICD C04, 2009-2018 showed the highest number of deaths (Table 1).

Men had the highest number of deaths in 2015, 2017, and 2020-2022 (15 deaths each). The 2009-2018 period stood out for its higher number of deaths due to ICD C01, C02, C03, C05 and C06, whereas ICD C04 occurred most often in 1999-2008. For women, 2011 and 2016-2019 showed the highest number of deaths (five each). The period

from 1999 to 2008 showed the highest number of deaths for ICD C06, whereas 2009-2018, for ICD

C01 and C02. The other topographies showed no predominance (Table 1).

Table 1 – Total deaths by topography (ICD C00-C06), period, and primary location of the tumor in men, women, and both sexes, Baixada Litorânea health region, Rio de Janeiro, aged from ignored age (Ign) to 99+ from 1979 to 2022.

ICD	1979-1988	1989-1998	1999-2008	2009-2018	2019-2022	Total
C00 – Lips						
Men	0	0	1	1	1	3
Women	1	0	0	1	0	2
Both	1	0	1	2	1	5
C01 – Base of the tongue						
Men	1	6	4	7	5	23
Women	0	1	0	3	0	4
Both	1	7	4	10	5	27
C02 – Other and unspecified parts of the tongue*						
Men	10	8	13	34	21 :	86
Women	2	4	4	13	4	27
Both	12	12	17	47	25	113
C03 – Gingiva						
Men	0	1	0	2	1	4
Women	1	0	0	1	0	2
Both	1	1	0	3	1	6
C04 – Floor of the mouth						
Men	1	0	13	7	2	23
Women	1	0	2	2	0	5
Both	2	0	15	9	2	28
C05 – Palate						
Men	3	3	1	8	7	22
Women	0	1	2	2	1	6
Both	3	4	3	10	8	28
C06 – Other and unspecified parts of the mouth**						
Men	8	13	23	40	16	100
Women	1	8	15	8	6	38
Both	9	21	38	48	22	138
Total	29	45	78	129	64	345

*Other parts of the tongue include: C020 – Malignant neoplasm of the dorsal surface of the tongue; C021 – Malignant neoplasm: Border of tongue; C022 – Malignant neoplasm of ventral surface of tongue; C023 – Malignant neoplasm of anterior two-thirds of tongue, part unspecified; C024 – Malignant neoplasm of other and unspecified parts of lingual tonsil; C028 – Malignant neoplasm of overlapping sites of tongue; C029 – Malignant neoplasm of tongue, unspecified.

** Other parts of the mouth include: C060 – Malignant neoplasm of the cheek mucosa; C061 – Malignant neoplasm of the vestibule of the mouth; C062 – Malignant neoplasm of the retromolar area; C068 – Malignant neoplasm of overlapping sites of other and unspecified parts of mouth; C069 – Malignant neoplasm of mouth, unspecified.

Source: MS/SVS/Daís/CGIAE/Mortality Information System – SIM (12).

Figure 1 shows the number of deaths from oral cancer across topographies according to age groups for men (Figure 1A), women (Figure 1B), and both sexes (Figure 1C). Deaths occurred more often in men aged 50-59 years, followed by those aged 60 to 69 years (86 and 72 deaths, respectively). Women aged 80 years or older showed the highest number of deaths (25), followed by those aged 70-79 years (19 deaths). Considering both sexes, it was found that the 50-59- and 60-69-year age groups had the highest number of deaths (104 and 86, respectively).

Men showed higher mortality rates in all topographies (Figure 2). The highest rate in men totaled 0.91 deaths per 100,000 men for malignancies of other parts of the mouth (ICD C06), followed by malignancies of other parts of the tongue, with a mortality rate of 0.79 deaths per 100,000 men. The analysis of women and both sexes showed the same pattern but with lower rates. For ICD C06 and C02, the rates in women totaled 0.28 and 0.22 deaths per 100,000 women, respectively. For both sexes, ICD C06 and C02 rates equaled 0.58 and 0.49 deaths per 100,000 individuals.

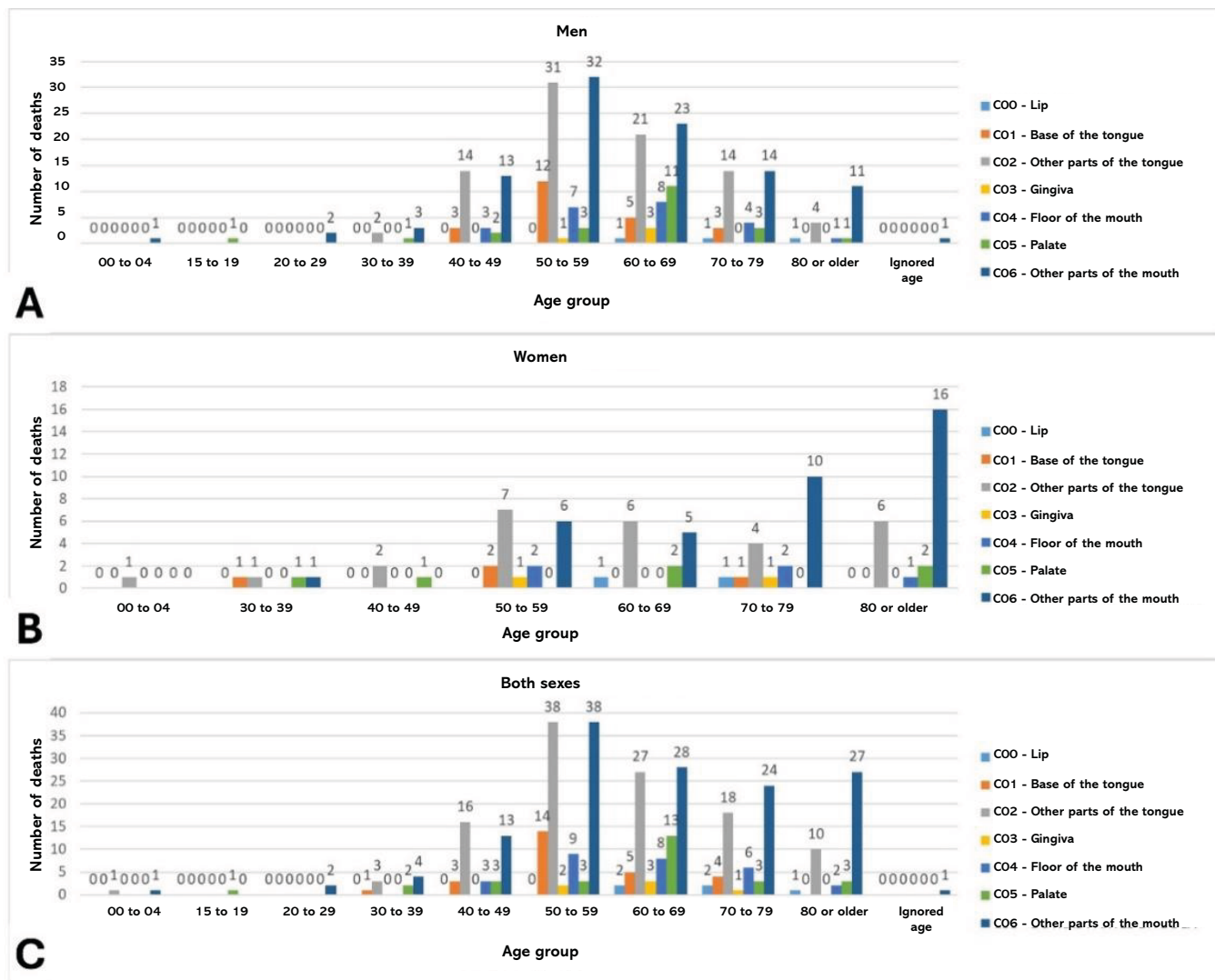


Figure 1 – Total deaths by topographies (ICD C00-C06), by age group, according to primary tumor location, Baixada Litorânea-RJ health region, with an age range of Ign. to 99+, from 1979 to 2022. A: Men; B: Women; C: Both sexes.
Source: MS/SVS/Daís/CGLAE/Mortality Information System – SIM (12).

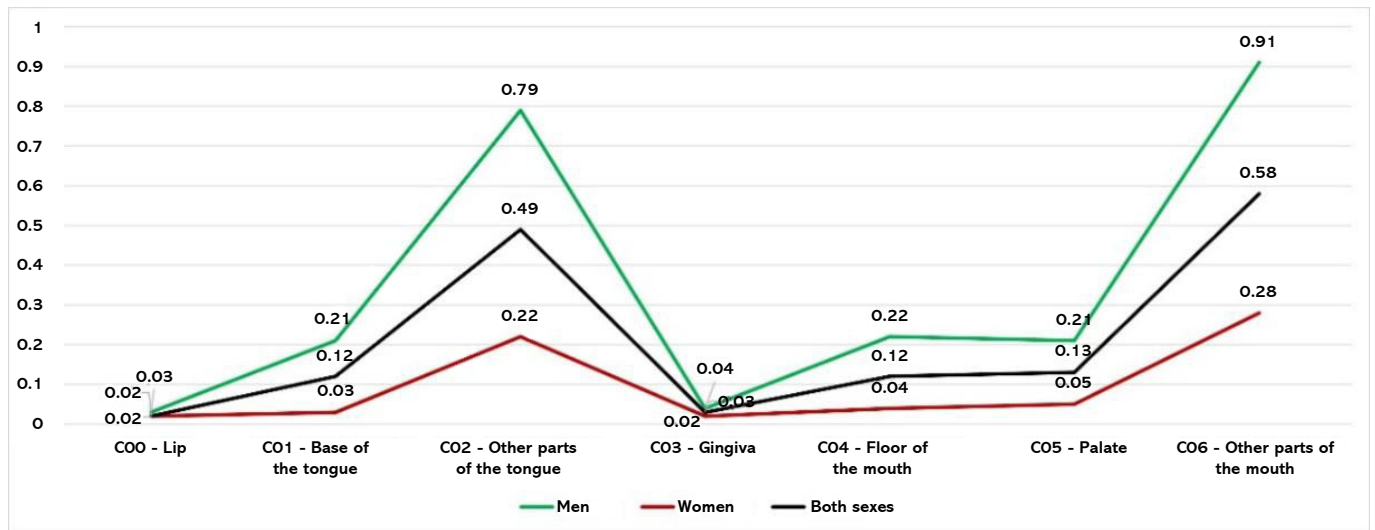


Figure 2 – Mortality rates by topography (C00-C06), according to the primary location of the tumor per 100,000 men and women adjusted by the world population, Baixada Litorânea-RJ, with an age range of lgn. to 99+, from 1979 to 2022.

Source: MS/SVS/Daisis/CGIAE/Mortality Information System – SIM (12).

DISCUSSION

The higher incidence and mortality observed among men in this study corroborate previous reports. This outcome mainly results from social, behavioral and occupational factors (13). Moreover, lower utilization of regular medical and dental care services by men contributes to the late diagnosis of the disease, worsened by neglect of oral health and risk factors such as smoking, alcoholism, and low frequency of preventive consultations (14-17).

Gomes et al. (18) analyzed oral cancer mortality in Brazil from 2012 to 2017 and, as in this study, found greater involvement of men. This study showed a 19% higher mortality rate in men than in women. Analyzing the mortality from oral cancer in adults from 2010 to 2019 across Brazilian regions, Amaral et al. (19) found higher rates in men than in women. In men, rates ranged from 4.21 in the Brazilian North to 8.69 deaths per 100,000 individuals in the Brazilian South. Women showed lower rates, ranging from 1.72 in the Midwest to 2.7 in the Northeast. The Southeast had a rate of 2.14 and 8.43 deaths per 100,000 women and men, respectively. It also showed the second highest rate in men (19). Thus, the national and international literature agree: men show higher mortality rates than women (20-23).

Malignant neoplasms of other parts of the mouth (C06) occurred the most, followed by other parts of the tongue (C02) for the isolated and grouped sexes. In total, two temporal analysis studies on oral cancer mortality in Brazil corroborate this result. The first encompassed the period from 2010 to 2020, finding that the topographies most associated with mortality

were C02 and C06 for men and C06 and C02 for women. Men showed an increasing mortality trend in topographies C02, C05 (palate) and C06 and women, in C06 (24). The second analysis evaluated the period from 1997 to 2023, finding the oropharynx (C10) as the most frequent location, followed by the tongue (C02) and unspecified mouth (C06) (5). C10 was not included in the present analysis. Oropharyngeal neoplasms are associated with a specific risk factor—human papillomavirus infection—which is unrelated to other malignant neoplasms of the mouth, resulting in a distinct clinical and epidemiological profile (25).

In both sexes, deaths occurred predominantly in adults. However, female victims were older than male ones, corroborating the literature (26-28). Similarly, a study carried out at Universidade Federal de Mato Grosso found that women have higher mortality in older age groups, especially from age 75 years onwards. The authors highlight a higher life expectancy associated with women, which, added to the greater burden of chronic diseases in old age, may contribute to increased mortality from malignant neoplasms (29).

As this study used secondary data, that is, information from official bodies such as the Mortality Information System, it is impossible to include relevant clinical details, such as the stage of the disease, for example. Additionally, the use of secondary data can bring the risk of underreporting, especially in regions with less access to health services or failures to fill out death certificates. Such underreporting can prevent the analyzed numbers from accurately representing the reality of the studied population.

Futhermore, as this is a retrospective time series, it is also impossible to establish cause-and-effect relationships between the involved factors (30).

However, despite its methodological limitations, this study offers an important contribution to the public health of this population segment since the scarcity of specific epidemiological data makes its results extremely valuable by filling this gap, offering concrete subsidies for planning toward the prevention, diagnosis, and organization of the local cancer care network. Moreover, the identification of mortality patterns, most affected age groups, and prevalent topographies enable public managers and healthcare providers to more effectively direct resources and strategies, promoting equity in access to care—provided for in the National Oral Health Policy (31). In addition, the production of regional data strengthens epidemiological surveillance and can stimulate the creation of specific oral health programs, educational campaigns, and professional training aimed at tracking suspicious lesions (31).

CONCLUSION

Mortality from oral cancer in the Baixada Litorânea region from 1979 to 2022 increased, with a higher number of cases from 2009 to 2018. The highest mortality rates occurred in men aged over 50 years in other parts of the mouth (C06) and tongue (C02). This study is the first to show that, despite fluctuations over four decades, the burden of mortality in the region continues to increase, highlighting the urgency of early intervention strategies and the strengthening of the local care network.

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