Late Diagnosis of Oral Cancer: Where Are We Going Wrong?

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Diagnóstico Tardio do Câncer de Boca: Onde Estamos Errando?

Diagnóstico Tardío del Cáncer de Boca: ¿Dónde Estamos Fallando?

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INTRODUCTION

Oral cancer has remained, for decades, one of the most neglected neoplasms in Brazil, despite having a high incidence and potentially avoidable mortality. For each year of the 2026-2028 triennium, a total of 17,190 new oral cavity cancer cases is estimated in the country, of which 12,260 are in men and 4,930 in women[1].

Even in the face of expressive figures like these, most diagnoses are still defined in advanced stages of the disease[2]. Studies indicate that over three-quarters of oral cavity tumors are identified late, usually in stages III or IV[2,3], a circumstance associated with more aggressive therapies, worse prognosis, and substantially higher costs to the health system. The cost of treatment for stage IV (R$ 25,600) is estimated to be up to five times higher than the treatment for stage I (R$ 5,100), while five-year survival reduces drastically from 80% to only 20%[4].

This reality persists even after expanding Primary Health Care (PHC) and Family Health Strategy, and increasing the number of dentists in the public healthcare network. With all that considered, a critical reflection arises: why, despite all the structural advances, do we continue to fail at early diagnosis?

This article argues that the core issue of late diagnosis of oral cancer lies not only in the lack of technical knowledge among professionals, but in the combination of structural, educational, political, and cultural failures that shape, limit, and ultimately weaken the health system's ability to prevent, detect, and treat this disease early. The issue must be faced without euphemisms: late diagnosis of oral cancer is no accident, but a produced phenomenon, fostered by misaligned priorities, insufficient training, access barriers, and maintenance of historical social inequalities.

To understand where the error lies, one must critically analyze these multiple dimensions — clinical, institutional, and social — that interact to produce one of the most persistent and avoidable problems in the Brazilian public healthcare.

DEVELOPMENT

STRUCTURAL UNDERPRIORITIZATION OF ORAL HEALTH IN PHC

Studies on the diagnostic timeframe in oral cancer show that a significant portion of time until diagnosis confirmation is concentrated in primary care, highlighting the influence of organizational factors, such as care prioritization, duration of consultations, and clinical recognition capacity, on what is known as professional delay[5,6]. Attributing late diagnosis to a lack of time in consultations or high demand may obscure a more structural issue: the persistent underprioritization of oral health and oral cavity lesions, including potentially malignant oral disorders and oral cancer, within the work process and service organization.

Dentists usually claim to know how to recognize suspicious signs, like ulcers, leukoplakia, and actinic cheilitis, but such findings are not always treated as diagnostic emergencies. And another question can be raised: do they really know how? It is not uncommon for cases to arrive at specialized Stomatology centers after weeks or months of progression, due to incorrect initial approaches. In different care levels, malignant or potentially malignant lesions may be interpreted as inflammatory or traumatic processes, without proper diagnostic investigation[7-9].

Within PHC, the mouth is still seen as an exclusive dentistry territory, while it remains restricted to specific actions and poorly integrated into care flows. This segregation is harmful: oral cancer is not only a "dentist's domain", but a public health issue that must mobilize any professional who examines a patient. Furthermore, the population usually associates dentists with dental

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problems only, ignoring their actions, for example, in the oral mucosa, cervical region, and salivary glands. Therefore, many people do not seek dentists when afflicted with oral injuries, which contributes to delayed diagnosis[5]. The literature suggests, for example, that proactive actions to actively seek out injuries in at-risk groups, such as smokers, chronic alcohol users, the elderly, and workers exposed to the sun, are still underexplored, but very important[10]. Andrade[10] actively sought oral injuries in Family Health Units and emphasizes that, when targeting at-risk groups (smokers and alcohol users), it is an efficient and essential strategy for early diagnosis of squamous cell carcinoma, historically identified in advanced clinical stages.

The international literature presents consistent evidence on the superiority of targeting at-risk groups in screenings in comparison to the universal population model. Data from long-term community trials indicate that periodical visual examination of the oral cavity is capable of reducing specific mortality from oral cancer only among tobacco and alcohol users, with no significant impact on the general population[11]. Behavioral profile-based stratification substantially increases the efficiency of actions, reducing the number of necessary exams and improving the real impact on survival[12]. Such findings reinforce that risk-based strategies, when integrated into organized screening systems, present more epidemiological rationality and cost-effectiveness than wide and not targeted campaigns.

The "Guidelines for clinical dental practice in primary health care: procedures for diagnosing potentially malignant oral disorders and oral cancer" *(Diretriz para a prática clínica odontológica na atenção primária à saúde: condutas para diagnóstico das desordens orais potencialmente malignas e do câncer de boca)*[13] has been recently published. These guidelines compose the list of documents related to adult and elderly oral health, and address the screening of potentially malignant oral disorders, which, when detected promptly, can lead to more favorable outcomes for patients in terms of quality of life and survival. The guidelines are not always incorporated into the daily routine of teams, whether due to a lack of institutional encouragement, the absence of binding protocols, or poor integration among professionals. This gap between technical norms and care practice reveals that the main issue is not a lack of instruments, but the priority given to them.

Thus, when they say the diagnosis is issued late due to a "lack of time", it actually means that the system does not provide time for it, suggesting that oral examination is seen as something secondary, optional, or unnecessary. And while such perception persists, late diagnosis will be unavoidable.

PROFESSIONAL TRAINING: EXCESSIVE TECHNICALITY AND LACK OF CRITICAL PERSPECTIVE

The training of health professionals constitutes another important pillar of this problem. In many Dentistry and Medicine courses, oral cancer is taught in a fragmented approach, mainly biomedical, centered on the morphological description of injuries and surgical treatment. What is glaringly lacking is training that connects technical knowledge to integrated care practices, considering social determinants, access barriers, and the subjective dimensions of being ill.

Students often fail to develop enough clinical competence throughout their education to early identify evident signs of oral cancer, and are also ill-prepared to conduct sensitive dialogs with vulnerable populations, confront mistaken beliefs, myths on cancer, or resistance to care, key elements in the follow-up of people at risk. The lack of this critical training results in a clinical practice that is disconnected from reality, often incapable of interfering more effectively[14,15].

As emphasized by Paulo Freire[16]: "there is no true word that is not praxis": one must reflect to act and act to transform. However, health training is often grounded in a technical logic, whose focus is more on the disease than on the subject[17]. Without this human and social dimension, recently graduated professionals arrive at healthcare services with a limited perspective that does not contemplate the complexity involved in early detection of oral cancer.

Moreover, curricula rarely include practical clinical communication skills, expanded preventive approach, care pathway management, or understanding of racial and territorial inequalities, all essential for professionals to recognize and face the factors that lead to delayed oral cancer diagnosis.

Insufficient education is not a detail: it structures how the future professional will perceive or fail to perceive the emergency of a suspicious lesion.

SOCIAL INEQUALITY: THE INVISIBLE WEIGHT THAT SICKENS AND SLOWS ORAL CANCER DIAGNOSIS

No discussion on oral cancer is complete without considering social inequality. In Brazil, this disease has a face, gender, territory, and social class: it mainly targets male informal workers, agriculturists, people with low education levels, and peripheral communities exposed to accumulated vulnerabilities[18-21].

These people, in turn, are the ones who have less access to regular consultations, present lower adherence to preventive consultations, and face structural access

barriers[22,23], like distance from services, incompatible hours with users' precarious working hours, lack of transportation, rotation of professionals, and difficulty navigating the system. Thus, when a symptom arises — a wound that does not heal, a persistent pain, an abnormal stain — the person does not seek healthcare right away, and when they do, they usually go through an emergency service, where mouth exams are rarely a priority.

Additionally, the referral and counter-referral network are usually slow and bureaucratic. Patients reportedly wait months for biopsies or consultations with a specialist. For a disease in which time is determinant, this delay is devastating: the public system, by failing to offer effective care pathways, produces the very severity of the illness they intend to fight[24]. Despite delay reports, Brazil relies on the 60-day Law (Law N. 12,732/2012)[25], which provides that any person with a cancer diagnosis shall initiate oncological treatment in the National Health System (SUS) within 60 days of having their diagnosis confirmed by an anatomo-pathological report. The law applies to every type of cancer, except for thyroid cancer and non-melanoma skin cancer, and the count starts on the date of the report. Treatment initiation is considered the first therapy.

As pointed out by Ayres[26], health policies that ignore the integrity of the subject are at risk of "producing more exclusion than care". In oral cancer, such exclusion is not only statistical: it translates into faces, stories, losses, and avoidable mutilations.

In this context of reflection on oral cancer in Brazil, a recent article by Martins et al.[27] offers extremely relevant insights. The authors explore the enduring connections between the Brazilian colonial period and the current epidemiological panorama of head and neck cancer (including oral cancer). The detailed analysis of the research shows how the historical alcohol and tobacco production and consumption, added to structural racism, significantly contribute to disparities in patient access to oral cancer diagnosis, treatment, and prognosis. The study, therefore, presents new views and evidence-based strategies to break with the adverse impact of this colonial legacy in Brazilian public health.

INSUFFICIENT PREVENTION CAMPAIGNS AND PUBLIC COMMUNICATION DISCONNECTED FROM TERRITORIES

The oral cancer prevention campaigns, despite being well-intended, have presented low effectiveness due to not considering the local realities and not producing constant work[8]. Most of them concentrate on general information on smoking, alcohol intake, and solar exposure, but do not address the sociocultural dynamics that shape habits and perceptions of risk. Effective prevention and early diagnosis of oral cancer needs active listening, dialog between different knowledge, community action, and intersectoral articulation. Without that, campaigns become merely informative pieces that circulate without generating actual impact.

In addition to these communication and sociocultural limitations, the literature shows fragilities related to the problem-solving of screening and early detection actions. Problem-solving, understood as the healthcare system's ability to adequately respond to identified needs, ensuring diagnostic confirmation, timely treatment, and follow-up, is a key element so that campaigns are not restricted to the occasional identification of suspicious injuries.

International systematic reviews strengthen this understanding. Kujan et al.[28], in a review about screening strategies for oral cancer, concluded that there is no robust evidence that population screening reduces mortality, highlighting the methodological limitations of the available studies. Similarly, Downer et al.[29,30] revealed a significant heterogeneity in the conduction of tests and insufficient evidence to support the effectiveness of isolated clinical screening. More recently, Parak et al.[31] observed that possible benefits of screening are concentrated in high-risk populations, with no consistent impact in the general population. In the same direction, Ribeiro et al.[32] highlighted the great methodological variability of the assessed programs and the need for organization and continuity of actions, so they translate into relevant clinical outcomes. In the Latin-American context, Pedroso et al.[33] showed limitations in the systematization, screening, and assessment of screening programs, with fragmented data on follow-up and results.

Conversely, when focusing on populations at greater risk, especially chronic tobacco and alcohol users, results tend to be more consistent. The randomized community trial conducted in Kerala, India, by Sankaranarayanan et al.[11], showed a statistically significant reduction in mortality by oral cancer among tobacco and/or alcohol users submitted to periodical visual screening, despite having had no impact on the general population. Cheung et al.[12], on the other hand, indicated that behavioral profile-based stratification substantially improves screening efficiency, reduces the necessary number for screening, and strengthens the impact on specific mortality. These findings reinforce that effectiveness does not reside in indiscriminately increasing coverage, but in strategically focusing and integrating screening into organized diagnosis and therapeutic follow-up systems.

In line with this strategy, Oswal et al.[34] showed that, even in contexts where there is a nationally instituted policy, effectiveness relies on the operational capacity

of identifying priority groups, ensuring qualification of teams, and continuity of care. Therefore, campaigns targeted at high-risk populations, when articulated to organized care networks, present more epidemiological rationality, better cost-effectiveness, and higher potential impact on mortality than universal and episodic initiatives.

This debate converses with national findings. The study by Antunes, Toporcov, and Wünsch-Filho[35], which assessed the oral cancer prevention and early diagnosis campaign conducted along with the influenza vaccination in the elderly population in the State of São Paulo in 2004, showed important fragilities in the problem-solving dimension. Although 238,087 people over 60 years of age had been examined (6.8% of the State population in that age group), only eight of the 23 participating regional coordinations recorded information on follow-up. Among the 5,280 people referred to diagnostic elucidation in those regions, 60.5% had their problem solved, and 0.5% (26 cases) received a confirmed oral cancer diagnosis; however, 22.5% did not complete the diagnosis, and 16.5% had no recorded information on their outcome. The lack of systematic screening and the high proportion of cases with no resolution demonstrate fragility in the articulation between detection and continued care, compromising the initiative's effectiveness.

In regulatory terms, the Ministry of Health released the Oral Health Guidelines[36] in 2004, establishing early diagnosis, immediate treatment, and use of methods such as biopsies to elucidate oral injuries as priorities, in addition to reinforcing the strategic role of primary care in the coordination of care. Although the 2004 Guidelines already stated the strategic role of PHC, the persistence of late diagnoses demonstrates that the norm did not change the practice. In this sense, the current structure of the Oral Cancer Care Pathway by the Ministry of Health[37] arises as an attempt to overcome these historical gaps, with the potential to qualify the organization of care by structuring care itineraries, defining responsibilities within care levels, and establishing screening indicators. However, consolidating this proposal depends on intersectoral articulation, adequate funding, permanently qualifying professionals, and implementing information systems that enable assessing clinical outcomes and not just the volume of consultations.

Given the challenge of articulating care levels and scarcity of specialists in certain regions, innovative technologies, like Tele-stomatology and the use of Artificial intelligence, emerge as devices capable of shortening the distance between the PHC and the specialized center[38,39]. They enable primary care professionals to identify and remotely share suspicious injuries with specialists who might be far away, expanding screening in regions with fewer specialists. Despite challenges such as integrating clinical workflows and the need for robust databases, authors like Tobias et al.[40] highlight that this approach could reduce delayed diagnoses, strengthen PHC, and improve prognoses and survival. What Tobias et al.[40] pointed out as a possibility in 2022 is now an imperative need to reduce the technical isolation of dentists in PHC.

INSTITUTIONAL FRAGMENTATION AND LACK OF SHARED ACCOUNTABILITY

Another key problem is the lack of clear accountability within the healthcare network. When a suspicious lesion is identified, who is, in fact, responsible for quick follow-up? Who follows through with the patients while they wait for a biopsy? Who ensures they do not get lost within the flow?

What is observed in practice is a deep fragmentation: professionals believe the responsibility always lies in a different sector — the specialist, the doctor, the secondary care dentist, the regulation system. This lack of coordination and shared accountability transforms the patient into a disoriented body that circulates through the system's corridors, with no continuity, no guidance, and often, no answers.

And while this logic persists, late diagnosis will be inevitable. Effective healthcare systems are characterized by well-structured care pathways, strong PHC coordination, and clear flow of responsibility. That is, unfortunately, not the case in most oral cancer scenarios in Brazil.

UNDER-APPRECIATION OF STOMATOLOGY AND ORAL AND MAXILLOFACIAL PATHOLOGY

A poorly debated structural aspect in the context of late diagnosis of oral cancer regards the distribution and appreciation of dental specialties that are strategic to the healthcare system. Fields such as Stomatology and Oral and Maxillofacial Pathology play a key role in qualifying oral cancer diagnosis and articulating referral between primary care and higher complexity services. However, there is a relative scarcity of these specialists in the country, both in absolute terms and in their insertion within public care networks. According to the Brazilian Federal Dentistry Council[41], of the 157,110 specialist dentists registered in the council, only 460 are oral and maxillofacial pathologists and 1,181 are stomatologists. The low presence of these professionals weakens matrix support to primary care, increases time until diagnosis confirmation, and contributes to fragmented care flows.

This fragility directly reverberates in the care journeys. Casotti, Almeida, and Silva[24], when analyzing the journeys of oral cancer users of the Health Care Network, showed itineraries marked by multiple referrals, repeated

consultations, and difficulties in care coordination, revealing structural barriers in the referral and counter-referral system. The lack or insufficient number of specialists qualified in stomatological assessment and timely anatomopathological interpretation tends to elongate these journeys, increasing the interval between a clinical suspicion and treatment initiation.

Additionally, even after performing the initial biopsy, barriers related to diagnosis support and staging persist. The unequal availability of imaging exams, pathology services with timely reports, and centers qualified for therapeutic definition constitutes a national problem that affects the time to treatment initiation. Montagnoli et al.[42], when investigating predictive factors associated with oral and oropharyngeal cancer time to treatment initiation, demonstrated variables related to system access and organization of care that significantly impacted therapeutic intervals. These findings indicate that the delay is not restricted to the time of clinical detection, but extends to the journey between histopathological confirmation, staging, and therapeutic definition.

Therefore, discussing the late diagnosis of oral cancer requires expanding the focus beyond the individual qualification of the primary care professional or the promotion of campaigns. It is necessary to problematize the policy of qualification and distribution of strategic specialists, strengthen the insertion of Stomatology and Oral and Maxillofacial Pathology into public networks, and combat the technological and organizational limitations that compromise the diagnostic-therapeutic journey. Without this systemic approach, the hiatus between clinical suspicion and treatment initiation tends to persist, even in the face of normative advances and expansion of access to clinical examination.

CONCLUSION

Late diagnosis of oral cancer is neither an isolated phenomenon nor a product of individual lack of knowledge. It is a systemic, multifactorial problem that expresses deep flaws in how the Brazilian public healthcare is organized, qualifies its professionals, communicates the risks, and cares for more vulnerable populations.

To confront this scenario, it is not enough to reinforce clinical knowledge or produce new campaigns; it is necessary to promote structural changes: consolidate continued education; integrate multiprofessional teams; organize early detection protocols; articulate quick referral networks; and, above all, incorporate the social and human dimension of being ill into clinical care.

It is also needed to recover the centrality of PHC as care pathway coordinator and promote work conditions that enable oral examination to be regular practice, not an occasional exception.

Oral cancer does not suddenly settle in. It gives out signs, warnings, and alerts. When the diagnosis arrives late, it is not a failure of the illness, but the system. Transforming this reality is possible. But it requires political commitment, institutional courage, and an approach that faces oral cancer as what it really is: a brutal marker of inequality and a moral test for our healthcare system.

CONTRIBUTIONS

All the authors have substantially contributed to the study design, data acquisition, analysis, and interpretation, wording, and critical review. They approved the final version for publication.

DECLARATION OF ARTIFICIAL INTELLIGENCE USE

The authors used artificial intelligence (AI) in this article only to help with wording. The analysis, interpretation, or synthesis of results is the sole responsibility of the authors, with no AI intervention.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interest to declare.

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