

# Oral Cancer and Social Media: Integrative Review of Global Evidence

<https://doi.org/10.32635/2176-9745.RBC.2026v72n3.5626EN>

*Câncer Bucal e Mídias Sociais: Revisão Integrativa da Evidência Global*

*Cáncer Bucal y Medios Sociales: Revisión Integradora de la Evidencia Global*

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## ABSTRACT

**Introduction:** Oral cancer is a significant public health problem, and addressing it requires, among other strategies, effective dissemination of information about risk factors, preventive measures, main symptoms, and treatment. Considering the important transformations in communication, social media is an important tool for disseminating knowledge. **Objective:** To analyze the scientific knowledge about oral cancer disseminated through social media. **Method:** An integrative literature review was conducted in the PubMed/Medline, Web of Science, Science Direct, and Scopus databases using the descriptors *oral cancer* and *social media*. After excluding duplicates and applying the eligibility criteria, seven articles were included for analysis. **Results:** The studies included in this review highlighted the importance of social media in disseminating content about oral cancer, especially regarding prevention, early detection, and risk factors. On the other hand, topics related to treatment, prognosis, and clinical outcomes are underexplored. The target audience for the content published on the platforms investigated by the analyzed articles was heterogeneous: YouTube and Bilibili concentrated on materials aimed at institutional and professional education; Instagram and Twitter concentrated on content mainly directed at the lay public. Important limitations were also identified regarding the credibility, clarity, and usefulness of the published information. **Conclusion:** Investing in more structured digital health communication strategies, multilingual campaigns, and initiatives to strengthen health literacy can contribute to improving the reach, equity, and quality of messages about oral cancer.

**Key words:** Mouth Neoplasms; Risk Factors; Social Media; Scientific Communication and Diffusion.

## RESUMO

**Introdução:** O câncer bucal é um importante problema de saúde pública e seu enfrentamento requer, entre outras estratégias, adequada divulgação das informações sobre fatores de risco, mecanismos de prevenção, principais sintomas e tratamento. Considerando as importantes transformações no campo da comunicação, as mídias sociais constituem importantes ferramentas de disseminação de conhecimento. **Objetivo:** Analisar a produção de conhecimento científico acerca do câncer bucal em mídias sociais. **Método:** Revisão integrativa da literatura nas bases *PubMed/Medline*, *Web of Science*, *Science Direct* e *Scopus* utilizando-se os descritores *oral cancer* AND *social media*. Após a exclusão das duplicatas e aplicação dos critérios de elegibilidade, foram incluídos sete artigos para análise. **Resultados:** Os artigos desta revisão revelaram a importância das mídias sociais na divulgação de conteúdos sobre o câncer bucal, especialmente sobre prevenção, detecção precoce e fatores de risco. Por outro lado, tópicos relativos ao tratamento, prognóstico e desfechos clínicos são pouco explorados. O público-alvo do conteúdo publicado nas mídias exploradas pelos artigos analisados foi variado: *YouTube* e *Bilibili* concentraram materiais voltados à educação institucional e profissional; *Instagram* e *Twitter* com conteúdo majoritariamente direcionados ao público leigo. Revelaram-se ainda fragilidades quanto à credibilidade, clareza e utilidade das informações publicadas. **Conclusão:** Investimento em estratégias mais estruturadas de comunicação em saúde digital, campanhas multilíngues e iniciativas voltadas ao fortalecimento da literacia em saúde podem contribuir para melhorar o alcance, a equidade e a qualidade das mensagens sobre câncer bucal.

**Palavras-chave:** Neoplasias Bucais; Fatores de Risco; Mídias Sociais; Comunicação e Divulgação Científica.

## RESUMEN

**Introducción:** El cáncer oral es un problema de salud pública importante, y enfrentarlo requiere, entre otras estrategias, una adecuada difusión de información sobre los factores de riesgo, los mecanismos de prevención, los principales síntomas y el tratamiento. Considerando las importantes transformaciones en el ámbito de la comunicación, los medios sociales constituyen herramientas importantes para la difusión del conocimiento. **Objetivo:** Analizar la producción de conocimiento científico sobre el cáncer bucal en los medios sociales. **Método:** Revisión bibliográfica integradora en las bases de datos *PubMed/Medline*, *Web of Science*, *Science Direct* y *Scopus*, utilizando los descriptores *oral cancer* AND *social media*. Después de excluir duplicados y aplicar los criterios de elegibilidad, se incluyeron siete artículos para el análisis. **Resultados:** Los artículos de esta revisión revelaron la importancia de los medios sociales en la difusión de contenido sobre el cáncer oral, especialmente en lo referente a prevención, detección temprana y factores de riesgo. Por otro lado, los temas relacionados con el tratamiento, el pronóstico y los resultados clínicos están poco explorados. El público objetivo del contenido publicado en los medios explorados por los artículos analizados fue diverso: *YouTube* y *Bilibili* se centraron en materiales dirigidos a la formación institucional y profesional; *Instagram* y *Twitter*, con contenido dirigido principalmente al público general. También se revelaron deficiencias en cuanto a la credibilidad, claridad y utilidad de la información publicada. **Conclusión:** Invertir en estrategias de comunicación de salud digital más estructuradas, campañas multilíngües e iniciativas destinadas a fortalecer la alfabetización en salud puede contribuir para mejorar el alcance, la equidad y la calidad de los mensajes sobre el cáncer bucal.

**Palabras clave:** Neoplasias de la Boca; Factores de Riesgo; Medios de Comunicación Sociales; Comunicación y Divulgación Científica.

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## INTRODUCTION

Cancer is one of the world's main public health problems and the second leading cause of death of non-communicable diseases (NCDs)<sup>1</sup>. According to the Global Cancer Observatory, 9,743,832 deaths occurred for all types of cancer and 19,976,400 new cases of cancer were diagnosed in 2022<sup>2</sup>. The mortality rate of lip and oral cavity cancer was 1.9/100,000 inhabitants, the 15<sup>th</sup> most lethal cancer worldwide<sup>2</sup>.

Analyses of oral cancer in Brazil indicate that between 2013 and 2019, a rising trend in the prevalence rates associated with persistently high proportion of diagnoses and late staging was observed<sup>3</sup>, a scenario that affects the prognosis and reveals persistent challenges to control the disease. Recent epidemiological data estimate that approximately 781,000 new cancer cases will occur in the triennium 2026-2028 in Brazil, and 518,000 excluding non-melanoma skin cancer. For lip and oral cavity cancers, 17,190 new cases were estimated annually, of which 12,260 in men (adjusted rate of 8.47 per 100,000) and 4,930 in women (adjusted rate of 2.67 per 100,000), with clear predominance of men<sup>4</sup>. Therefore, early detection and timely treatment continue to be critical because they allow less aggressive interventions with high likelihood of therapeutic success and positive impact on survival<sup>5</sup>.

The main risk factors for oral cancer include smoking, alcohol abuse, obesity and low intake of fruits and vegetables<sup>4</sup>. Prolonged unprotected sun exposure is associated with lip cancer and human papillomavirus infection (HPV) with tumors of the oropharynx<sup>4</sup>. Early recognition of risk factors and warning signs, supported by population-based educational strategies, may contribute to improved prevention, early diagnosis, and better patient outcomes<sup>5</sup>.

It is necessary to consider the profound transformations that have occurred in communication technologies since the 1990s in relation to the development of educational actions focused on addressing oral cancer and the changes entailed by the expansion of digital social media<sup>6</sup>. Social media are a set of internet-based apps that allow the creation and sharing of user-generated content<sup>7</sup>. They encompass social networks, blogs, forums, wikis, photo and video sharing sites among other formats<sup>8</sup>. Given their potential for dissemination of information and widespread use, social media can contribute to spreading health information.

The literature confirms the importance of social media as a communication strategy about different types of cancer. A study conducted in the United States showed significant impact of the use of social media in the awareness about HPV, although associations with screening-related awareness and behavior have not been

identified<sup>9</sup>. A literature review concluded that social media is a promising tool for awareness and prevention of skin cancer<sup>10</sup>. In India, the engagement with social media is related to increased knowledge about breast cancer and it has also contributed to awareness and search for preventive practices by some women<sup>11</sup>.

Social media are an important source of information about oral cancer; it was pointed out as the main source of information in an investigation of knowledge of oral squamous cell carcinoma<sup>12</sup> and among undergraduate students of arts, commerce and computer in India, in addition to poor awareness of risk factors, it has also been identified that their main source of information on oral cancer was mass media – television, radio – and social media<sup>13</sup>.

Platforms such as Twitter, Instagram and YouTube are primary sources of information on oral cancer for a large proportion of the population. Users who actively share health content on social media are more knowledgeable about symptoms and risk factors of oral cancer<sup>14-16</sup>. Despite the benefits, there are a large amount of misleading information about cancer on social media<sup>17</sup>.

Given the expansion of the Internet and social media as a source of health information, the following question is brought up: what type of knowledge arises from the investigations on oral cancer and social media? The systematization of the scientific literature can help to identify communication weaknesses and understand the quality of the digital content produced and improve the strategies of knowledge dissemination and addressing oral cancer.

The aim of this study was to identify and analyze the production of scientific knowledge available on oral cancer and social media.

## METHOD

An integrative literature review was conducted following the methodological framework proposed by Whittemore and Knaff<sup>18</sup> that aimed to synthesize and analyze evidence about the knowledge generated on oral cancer and social media. The comprehensive search of the scientific literature was conducted on September 10, 2025 in CAPES Journal Portal in the databases PubMed/Medline, Web of Science, Science Direct and Scopus. Using the Boolean operator “AND” the descriptors “*oral cancer*” and “*social media*” were used. The combination of these descriptors was applied in PubMed/Medline for “All Fields” and in the other databases for “Title”/“Abstract”/“Keywords”. The descriptors were obtained in the structured vocabularies of Medical Subject Headings (MeSH).

The choice of terms was based on their widespread use in the international literature and the intention of retrieving studies whose primary focus explicitly addressed the interface between oral cancer and social media. It was decided not to adopt synonyms or variations of the terminology (such as “mouth cancer”, “oral neoplasm”, “digital media” or “online platforms”) to ensure greater thematic specificity.

The 111 articles initially identified were exported to Rayyan where the investigators performed an independent and blinded screening. After removing duplicates, titles and abstracts of 54 articles were screened. The eligibility criteria were complete and available publications in English, Portuguese and Spanish, addressing the topic of oral cancer and social media explicitly in any year. Literature reviews, non-scientific articles (conference proceedings, editorials, letters to the editor or opinion articles), studies that did not address the theme or where social media was not the focus of analysis, but rather a methodological strategy (data collection, for example) and investigations focused on digital applications that were not defined as social media were excluded. Studies that mentioned social media only superficially without direct connection with oral cancer were excluded as well.

## RESULTS

After applying the eligibility criteria, eight articles were eligible for full-text screening and eventually, seven were included in the review. Figure 1 depicts the flowchart of identification and selection of the articles.

The search and selection process resulted in seven studies<sup>20-26</sup> published between 2016 and 2025, reflecting the use of digital platforms that attempted to investigate mainly the quality and content usefulness of the information about oral cancer on social media, engagement, communication clarity and content usefulness. The main characteristics of the included articles analyzed are presented in Tables 1 and 2.

The studies included in the present review adopted diverse methodologies to analyze different social media, the most frequently investigated platforms were Instagram (n=3) and YouTube (n=3), followed by Twitter (n=2), while Bilibili (n=1) was analyzed specifically. Some studies analyzed more than one social media platform simultaneously and one of them, in addition to investigating social media, also analyzed the Google search platform.

Most of the articles surveyed social media in an international context involving different countries<sup>20,22-25</sup> where English predominated, except for the analyzes by Passos et al.<sup>21</sup> and Nunes et al.<sup>26</sup> who examined content published in Brazilian Portuguese.

The articles analyzed were published in high-impact journals as ‘Oral Diseases’ and ‘Scientific Reports’, demonstrating the growing scientific interest in the intersection between digital communication and oral health.

The articles were published between 2011 and 2024, encompassing extensive retrospective analyses<sup>26</sup> and data collection during specific awareness campaigns such as, for instance, “Oral cancer awareness month”<sup>24</sup> and the “Oral cancer awareness national month”<sup>22</sup>.

The majority of the studies adopted an observational design with strong predominance of content analysis. The analytical tools used included manual strategies and automated approaches such as Application Programming Interface (API), Natural Language Toolkit (NLTK) and topic modelling approaches such as BERTopic. The study by Zhang et al.<sup>25</sup> presented the most recent and methodologically robust comparison while simultaneously assessing YouTube and Bilibili in 300 videos with application of consolidated quality assessment instruments such as PEMAT, VIQI-sum, GQS and mDISCERN.

The target-audience of the content published in the platforms analyzed in the included articles depended on the platform. YouTube and Bilibili – a Chinese online entertainment platform that functions as video-sharing platform similar to YouTube – concentrated institutional and professional educational materials. Instagram and Twitter, on their turn, presented content mostly addressed to the lay public.

Overall, the results of the articles analyzed<sup>20-26</sup> indicated the evaluation of the quality of the information, engagement and communication clarity and usefulness of the content posted on social media as the main analytical dimensions. The most recurring themes were prevention, early detection and risk factors (tobacco, alcohol and HPV) related to oral cancer. On the other hand, treatment and clinical outcomes were marginally addressed. The nature of the content was indicated as predominantly educational but with low legibility and paucity of verifiable sources.

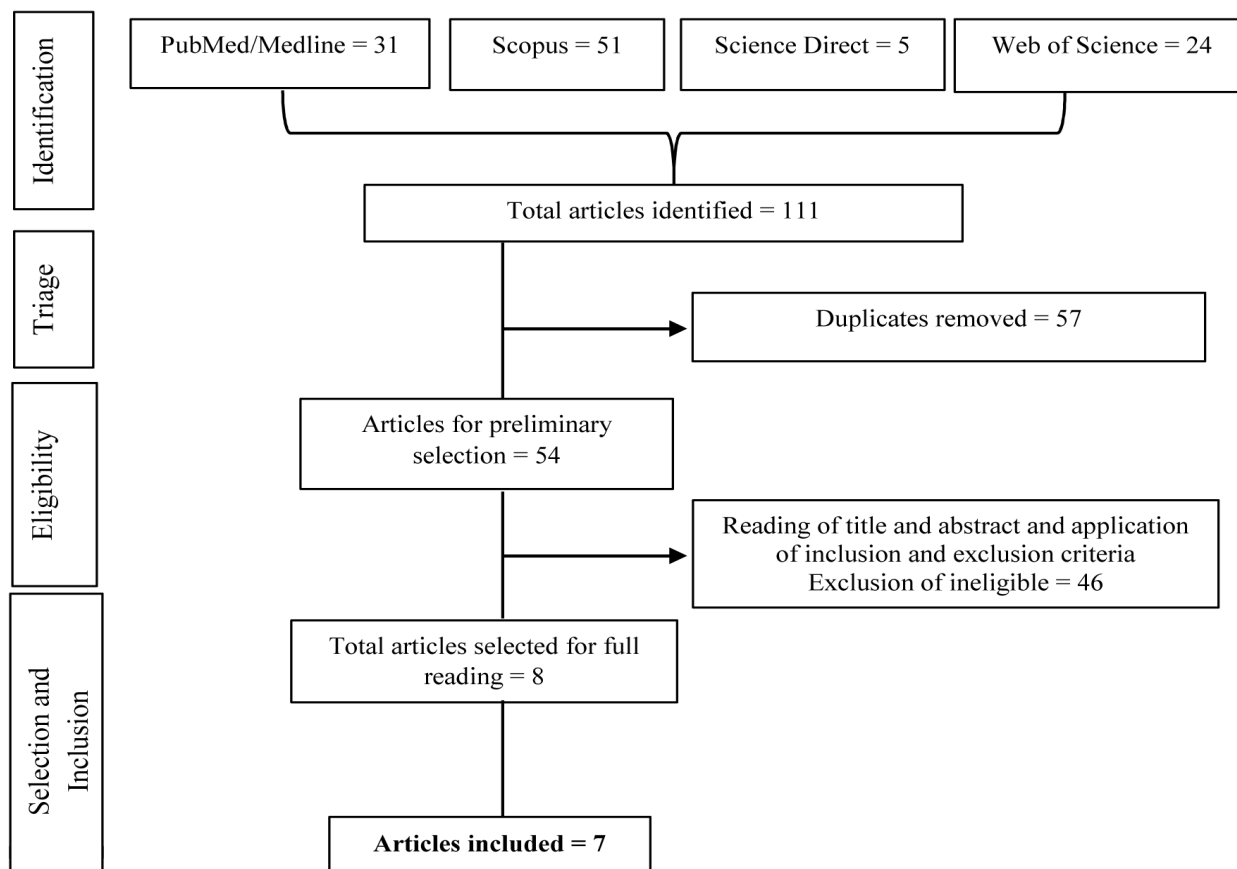
The articles of this review revealed important differences in format, technical depth and communication strategies. While on YouTube the predominance was audiovisual content and frequent use of standardized instruments, Instagram and Twitter posts were visual, briefs and least informational rigor as the main analytical dimensions.

The findings for each social media platform analyzed are presented below.

### YOUTUBE

YouTube was the most investigated platform in the studies included. Although characterized by extensive





**Figure 1.** Flowchart of bibliography search and number of articles identified and included in the study

**Source:** Adapted from PRISMA<sup>19</sup>.

reach and variety of content, the studies concurred with the predominance of low accuracy material and limited professional validation.

Hassona et al.<sup>20</sup> evaluated 188 videos, including 152 patient-oriented educational videos and 36 testimonial videos. The majority was published by health professionals (36.2%), TV channels (20.7%) and academic institutions (19.7%), while 15.4% were individual users. The mean score of usefulness was  $3.56 \pm 2.44$  (0–10), with only 7.5% classified as “very useful”. The lack of correlation between quality and engagement ( $p > 0.05$ ) revealed that popularity does not necessarily indicate educational value.

Passos et al.<sup>21</sup> analyzed 57 videos in Portuguese and identified that 89.5% of the content focused on early detection and 71.9% as moderately useful. However, there was a lack of authorship information and references. The correlation coefficient ( $r = 0.262$ ) reinforced that high visibility does not indicate informational quality.

Zhang et al.<sup>25</sup> compared 150 YouTube videos and 150 videos of Bilibili, resulting in mean scores of 75.1 for PEMAT-U, 14.1 for VIQI-sum and 3.0 for GQS, which indicate good understandability and moderate visual quality. Even so, mDISCERN-4 and mDISCERN-5

presented low scores, they evaluated whether the content indicated additional information sources and described areas of uncertainty or limitations related to the theme, respectively. Therefore, low scores show scarcity of complementary references and limited contextualization of gaps or controversies, which can potentially lead to poor depth and reliability of the information presented.

## BILIBILI

Similar to YouTube and popular in China, Zhang et al.<sup>25</sup> evaluated 150 videos produced mostly by independent authors (55.2%) and physicians (29.1%), of which 39.6% had a certified account. The content concentrated on etiology and prevention (54.7%), emphasizing betel nut, tobacco, alcohol and HPV as risk factors. The certification represents the official seal of verification granted by the platform after validation of the identity of the creator and may include categories such as verified personal identity or institutional/professional certification. This mechanism attests the authenticity of the profile and its formal link to an individual or organization, operating as a marker of credibility and informational accountability. In studies

**Table 1.** Characterization of the articles selected according to objective, social media investigated, language, samples and instruments applied

Authors/ year	Journal	Objective	Social media investigated	Language	Sample	Instruments applied
Hassona et al., 2016 <sup>20</sup>	<i>Oral Diseases</i>	Examine the content of YouTube videos on oral cancer and evaluate its usefulness in promoting early detection of the disease	<i>YouTube</i>	English	188 videos	Score of usefulness produced by the authors
Passos et al., 2020 <sup>21</sup>	<i>Medicina Oral Patologia Oral Cirurgia Bucal</i>	To evaluate the quality of information on oral cancer in Brazilian Portuguese on the Internet and compare with international studies	<i>YouTube</i>	Brazilian Portuguese	57 videos	Score of usefulness and index of interaction
			<i>Instagram</i>		39 posts	JAMA, Flesch
			<i>Google*</i>		54 sites*	JAMA, HONcode, Discern, Flesch
Chung et al., 2022 <sup>22</sup>	<i>Public Health in Practice</i>	Uncovering communication gaps between the public and healthcare professionals regarding oropharynx cancer associated with human papilloma virus	<i>Twitter</i>	Descriptors in English	3,229 tweets	Content analysis with specific instrument (use of nVivo)
Al Karadsheh et al., 2024 <sup>23</sup>	<i>Oral Diseases</i>	Examine the content of Instagram posts about oral cancer and assess its usefulness in promoting oral cancer awareness and early detection practices	<i>Instagram</i>	English	200 posts (40 videos and 160 photos)	Score of usefulness, Flesch-Kincaid
Binmadi, 2024 <sup>24</sup>	<i>Cureus</i>	Assess Twitter usage during "Oral Cancer Awareness Month" and explore the content of and engagement related to oral cancer	<i>Twitter</i>	English	5,543 tweets	Quantitative analysis of hashtags and words
Zhang et al., 2025 <sup>25</sup>	<i>Scientific Reports</i>	Evaluate the informational quality of oral cancer-related videos on YouTube and Bilibili	<i>YouTube, Bilibili</i>	English, Chinese	300 videos (150 of each platform)	PEMAT, VIQI-sum, GQS, mDISCERN
Nunes et al., 2024 <sup>26</sup>	<i>Ciência &amp; Saúde Coletiva</i>	Analyze the clarity and engagement measures of publication on oral cancer in the Instagram profiles of official health agencies in Brazil	<i>Instagram</i>	Brazilian Portuguese	775 posts	BR-CDC-CCI

**Caption:** \*Google is not a social media but the article included in the analysis.



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**Table 2.** Main findings on communication of oral cancer in the articles selected according to the social media investigated

Social media	Study - Author/year	Sample	Main findings
YouTube	Hassona et al. 2016 <sup>20</sup>	188 videos	Majority of the videos was educational, low usefulness score, cigarette as the most mentioned risk factor. Few videos referenced, 36.2% posted by health professionals
	Passos et al., 2020 <sup>21</sup>	57 videos	Most of the videos was moderately useful originated from TV channels advocating early detection. Tobacco and alcohol were the most cited risk factors
	Zhang et al., 2025 <sup>25</sup>	150 videos	Longer videos than Bilibili with more visualizations and likes; addressed more surgical treatment and prognosis, higher scores in quality metrics
Bilibili	Zhang et al., 2025 <sup>25</sup>	150 videos	Shorter videos than YouTube. Concentrated more in etiology and prevention. Low engagement
Instagram	Passos et al., 2020 <sup>21</sup>	39 posts	Majority of the posts by health professionals, low reliability content and difficult intelligibility
	Al Karadsheh et al., 2024 <sup>23</sup>	200 posts	Majority of posts by health professionals; prevalence of prevention and early detection; smoking and alcohol use as most frequent risk factors; most posts classified as non-useful or slightly useful. Difficult legibility
	Nunes et al., 2024 <sup>26</sup>	775 posts	Poor clarity of educational publications, most of the posts by odontoly councils
Twitter	Chung et al., 2022 <sup>22</sup>	3,229 tweets	Most of the posts originated from individual accounts, prevalence of prevention and risk factors, poor emphasis on the role of odontology professionals in prevention and detection of oropharynx cancer
	Binmadi, 2024 <sup>24</sup>	5,543 tweets	Most of the posts originated from individual accounts; only 0.8% of the posts originated from dentists; approaches to oral health and cancer involved different topics

about digital health communication, the certification is seen as a relevant indicator of reliability of a source because it represents transparency, traceability of authorship and perception of authority, factors associated with better quality and safety of the public information.

The mean scores of PEMAT-U = 70.1, VIQI-sum = 12.9 and GQS = 2.8 indicated moderate understandability and limited visual quality. Professionally produced videos performed better than independently produced videos in terms of clarity and reliability but without significant correlation between quality and engagement<sup>25</sup>.

Compared to YouTube, Bilibili's content was shorter and less interactive<sup>25</sup>.

## INSTAGRAM

The studies showed considerable heterogeneity of communication purposes and predominance of superficial content although the visual format favors broad population reach and immediate engagement<sup>21,23,26</sup>.

Passos et al.<sup>21</sup> evaluated 39 posts, 87.2% of which were created by health professionals, but 66.7% had little reliability according to DISCERN, and 53.8% of the texts were deemed difficult according to the Flesch score.

Nunes et al.<sup>26</sup> evaluated 775 publications of 81 institutional profiles with only 9.5% reaching proper clarity ( $\geq 90\%$ , according to the index BR-CDC-CCI), showing poor communication even in official profiles.

Al Karadsheh et al.<sup>23</sup> evaluated 200 international posts and concluded that 81.5% were educational, smoking (16%) and alcohol (12%) were the most cited factors and only 9.5% cited the source of information.

## TWITTER

Communication on Twitter is predominantly public, brief and individualized.

Chung et al.<sup>22</sup> analyzed 3,229 HPV-related tweets concerning oropharynx cancer, showing focus on prevention, risk for men and male vaccination. The short

format limited contextual and semantic interpretation, hindering inferences about public perceptions.

Binmadi<sup>24</sup> examined 5,543 tweets posted during “Oral Cancer Awareness Month” and observed predominance of posts from individual profiles (69.5%) and low participation of dental professionals (0.8%).

## DISCUSSION

The studies included in this review of scientific literature on oral cancer and social media were methodologically heterogeneous, and, consequently, variability of the indicators utilized to evaluate the engagement, legibility and usefulness of the publications, which limits the direct comparability of the findings. Overall, the findings suggest well-structured digital strategies to expand knowledge and favor preventive behaviors as already observed in other oncologic contexts. Sinha and Sharma<sup>11</sup> concluded that the engagement with social media was associated with increased knowledge and, on a lesser scale, to preventive practices of breast cancer, reinforcing the relevance of qualifying digital content also in oral cancer.

On the other hand, limitations in disseminating content on oral cancer in social media have been reported in the articles investigated: the language bias, with predominance of English-language content and low representativeness of local languages, the restricted use of search terms and, in a few cases, of short time windows, reducing the reach of the samples analyzed and the dynamic nature of digital platforms, which hinders the reproducibility of the studies and longitudinal comparison of the results.

Predominantly, the articles analyzed the social media content published in English with scarce inclusion of Latin American countries with only two investigations in Portuguese<sup>21,26</sup>. The low representativeness of Latin American studies can be associated with the search strategy adopted, eligibility criteria or the inexistence of studies indexed in the databases investigated that must be considered in the interpretation of the findings. This scenario reflects linguistic and cultural underrepresentation of the studies that can compromise the understanding of the reach and adequacy of the preventive messages on oral cancer available on social media and hinder more robust inferences on effective changes in knowledge or practices resulting from the exposure to the content analyzed.

Therefore, studies published in other languages can expand the analyses on the theme with new evidence culturally contextualized. In this regard, the importance of the use of social media in Brazil needs to be emphasized, according to a report from Global Digital<sup>27</sup> it accounted for roughly 80% of the population at the start of 2022.

Evidence suggests that language barriers and low levels of digital literacy expand health disparities<sup>28,29</sup>. The limited offer of content on oral cancer in different languages can limit its reach and reduce the formative potential.

Given the epidemiologic relevance of oral cancer in Brazil and in the world<sup>1,2,4</sup>, the weaknesses identified in the studies analyzed such as the lack of scientific validation, communicative standardization and paucity of verifiable sources can form a scenario that can restrict digital literacy.

A large proportion of the content evaluated had not clearly stated the authorship or utilized personal narratives reinforcing the risk of dissemination of inaccurate information, a phenomenon exacerbated in the digital environment<sup>21,23,26</sup>. The poor adherence to JAMA criteria and low proportion of websites with HONcode<sup>21</sup> seal suggest that the deficit of reliability is not limited to social media, but reaches the traditional web as well, exposing a wider problem.

Weaknesses related to reliability, clarity, and educational value disseminated on social media should be reflected upon and encourage actions to overcome these issues. The negative effects of fake news and the role of digital influencers as seen during the COVID-19 pandemic are an example<sup>6</sup>.

The methodological heterogeneity was also evident. The studies utilized instruments to evaluate the quality and readability instruments such as DISCERN, JAMA Benchmarks, BR-CDC-CCI, Flesch score and Flesch-Kincaid, VIQI-sum, GQS, mDISCERN and PEMAT<sup>21,23,25,26</sup>. The diversity, although methodologically applicable to capture multiple dimensions, hinders the direct comparability among the studies and the definition of minimal parameters to evaluate the informational quality. In addition, many of these instruments were developed for traditional websites of health literacy and their application on social media should consider technical, discursive and interactive specificities of the platforms<sup>30</sup>.

Relevant differences were found in the digital platforms analyzed. YouTube, despite extensive content, presented videos with low or moderate usefulness and lack of references<sup>20,21</sup>. Bilibili had low levels of textual clarity and reduced visual quality<sup>25</sup>. Instagram stood out due to communication heavily based on imagery and immediacy with high participation of professionals; however, the content frequently showed low technical consistency and systematic absence of verifiable references<sup>21,23,26</sup>.

Twitter, characterized by brief texts and high circulation speed, was relevant mainly for themes of HPV vaccination and prevention, allowing large scale monitoring of the public's perceptions and concerns<sup>22,31,32</sup>. However, the format of microblog tends



to favor the mobilization, warnings and expression of opinions rather than processes of deep learning, a pattern already described in reviews about the use of social media in health<sup>33</sup>. In addition, recent studies showed that the quality of the information posted on Twitter and in audiovisual platforms is frequently heterogeneous or unsatisfactory with significant circulation of misinformation, reinforcing the need for content curation and scientific validation<sup>34-36</sup>.

The structural and functional heterogeneity of the platforms can directly influence the findings of the studies analyzed, since distinct formats, interaction dynamics and engagement metrics impact both the content production and evaluation. Furthermore, the application of different evaluation instruments, many originally developed for specific textual or audiovisual content, poses methodological challenges when utilized in platforms with diverse communicational logics which can compromise the comparability among the studies. Consequently, such differences limit direct comparisons among the results and require caution in the integrated interpretation of the data and generalization of the conclusions.

Another aspect deserving consideration is the dynamic nature of the social media. Unlike traditional bibliographic databases, the digital content is continuously modified, deleted, updated or boosted by algorithms that change over time. The studies included in this review reflect specific temporal approaches, connected to search strategies, the timing of data collection and engagement metrics from that period. This characteristic can affect the reproducibility of the analyses, because the same search conducted in a different moment can generate dissimilar results. In addition, the fast circulation of content can limit the temporal validity of the findings and restrict its generalization to other contexts or periods. Therefore, the results should be interpreted as time-specific syntheses positioned in time, strengthening the necessity of longitudinal investigations and continuous monitoring to understand communicational trends in digital health.

Another pattern observed was the predominance of content addressing prevention and risk factors with little emphasis on prognosis, therapeutic modalities and clinical evolution. Factors like smoking and alcohol were extensively cited<sup>20,21,25</sup>, aligned with epidemiological evidence. However, contents related to treatment remain little explored, which can limit the understanding of the clinical complexity of the disease. This pattern has also been described in studies about other types of cancer<sup>9,10</sup>, suggesting that digital communication tends to focus on preventive messages instead of content related to continuity of care.

In addition, the studies included pointed out consistent recommendations to improve the communication of the risk: more clarity about the association between alcohol and tobacco, reinforce the role of HPV<sup>22</sup> and inclusion of relevant cultural warnings as the use of betel nut<sup>25</sup>. However, these recommendations have not yet translated into practice widely disseminated in the platforms evaluated. Studies that analyze how each one of these risk factors are addressed in social media can raise additional evidence that favor the better communication of health-related themes in these digital platforms.

The scarce presence on social media by health professionals and institutions, especially oral health revealed in the present review, shows how much can still be done in quality and dissemination of content in these platforms. Social media can still be strategic tools to disseminate content on the line of care of oral cancer – an organizational arrangement aimed to establish effectively the care pathway of the patient in the Health Attention Network (HAN)<sup>37</sup>.

In light of this evidence, it is necessary to strengthen communication strategies of digital health with active participation of academic institutions, health services, government agencies and regulatory entities. The implementation of digital content curation policies, content certification and encouragement to the production of evidence-based materials can contribute to qualify the information circulating in the social media. Additionally, the development of integrated, culturally contextualized, and multilingual campaigns can promote more equity and reach of the messages on oral cancer, expanding public knowledge and potentially contributing to early detection.

## CONCLUSION

Based on the literature analyzed in the integrative review, social media are important channels to disseminate information on oral cancer although improvements in quality, clarity and reliability of the published content are necessary.

However, the findings should be interpreted in view of some limitations. The limited geographic and sociocultural representation of the included articles, the methodological heterogeneity which hinders direct comparisons or quantitative synthesis and the fast changing nature of social media render the analyzed content rapidly obsolete and impede the generalizability of the results. Nevertheless, the available evidence reinforces the necessity of expanding the participation of academic institutions, health services, scientific societies and governmental bodies in the production, content curation

and certification of evidence-based, culturally adapted digital content and in multiple languages whenever possible.

Further studies are recommended that allow a better understanding of the perceptions of social media and to what extent the content shared influence behaviors that contribute to self-care and prevention of oral cancer.

The implementation of structured strategies of digital health communication, multilingual campaigns and initiatives to strengthen health literacy may improve the reach and quality of oral cancer messages. These actions have the potential to contribute to early detection, support preventive behaviors and ultimately improve how the population understands and responds to the disease.

### CONTRIBUTIONS

Manoela Carrera, Luciana Estevam Simonato and Denise Nogueira Cruz contributed substantially to the conception and design of the study, acquisition, analysis and interpretation of the data, writing and critical review. Thais Regis Aranha Rossi contributed to the interpretation and analysis of the data, drafting and critical revision of the manuscript. All the authors approved the final version of the manuscript to be published.

### DECLARATION OF CONFLICT OF INTERESTS

The authors declare no conflict of interests.

### DATA AVAILABILITY STATEMENT

All data supporting the findings of this study are included in the manuscript.

### FUNDING SOURCES

None.

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Recebido em 16/12/2025  
Aprovado em 9/4/2026

Associate editor: Caroline Madalena Ribeiro. Orcid iD: <https://orcid.org/0000-0003-2690-5791>  
Scientific-editor: Anke Bergmann. Orcid iD: <https://orcid.org/0000-0002-1972-8777>



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