



UNIVERSIDADE
FEDERAL
DE PERNAMBUCO

UNIVERSIDADE FEDERAL DE PERNAMBUCO

CENTRO DE CIÊNCIAS DA SAÚDE

CURSO DE ODONTOLOGIA

OLÍMPIO FRANCISCO DA COSTA NETO

**TENDÊNCIAS NACIONAIS E VOLUME DE BUSCAS DE INFORMAÇÕES SOBRE
CÂNCER DE BOCA: UM ESTUDO TRANSVERSAL DO COMPORTAMENTO DE
PESQUISA ONLINE NO BRASIL.**

Recife

2023

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Trabalho apresentado à Disciplina de
Trabalho de Conclusão de Curso
2 como parte dos requisitos para
conclusão do Curso de Odontologia
do Centro de Ciências da Saúde da
Universidade Federal de
Pernambuco.

Orientador: Prof. Dr. Danyel Elias da Cruz Perez

Co-orientadora: Hélen Kaline Farias Bezerra

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“O correr da vida embrulha tudo, a vida é assim: esquenta e esfria, aperta e daí afrouxa, sossega e depois desinquieta. O que ela quer da gente é coragem.”

(GUIMARÃES ROSA, 1956, p. 448)

RESUMO

Introdução: O câncer de boca é a 5ª neoplasia maligna mais comum entre homens brasileiros. Um diagnóstico precoce é crucial e engloba também a percepção do paciente sobre a doença, pois é necessário o conhecimento sobre os sinais e sintomas, hábitos e estilo de vida nocivos que possam contribuir para o desenvolvimento da patologia. Nos últimos 10 anos, o uso de dados da Internet mostrou-se fundamental na informática em saúde, principalmente na pesquisa online sobre sinais e sintomas de doenças. Os dados de tráfego de pesquisa on-line na plataforma do Google são úteis na análise do comportamento humano, através da busca de diversos assuntos, inclusive os que estão relacionados ao tópico saúde. O Google Trends é uma ferramenta aberta que possibilita a avaliação deste padrão de comportamento, pois fornece informações sobre tendências e variações de interesse de buscas on-line por palavras-chave e tópicos pesquisados ao longo do tempo. **Objetivo:** Analisar o volume de busca por câncer de boca no Brasil entre os anos de 2011 e 2021 através do Google Trends. **Método:** Através do Google Trends analisou-se o volume de buscas específicas pelo termo “câncer de boca”, na modalidade “Pesquisa Web”, dentro da categoria “Saúde”, entre Jan/2011 e Dez/2021, adicionando “Brasil” como parâmetro de localização. **Resultados:** Os estados do Nordeste, de modo geral, pesquisaram mais sobre o câncer no lapso temporal estabelecido. Os meses em que a busca pela temática foi maior foram: Novembro, Outubro e Maio. Além disso, o Volume Relativo de Busca (VRB) sobre câncer de boca caiu abruptamente nos anos críticos da pandemia da Covid-19. As campanhas de prevenção e combate ao câncer de boca, que ocorrem em meses específicos, podem ter influenciado na busca de informações online acerca do câncer oral. Neste sentido, a criação da Lei No 13.230, de 28 de dezembro de 2015, a qual embasa a campanha do “Novembro Vermelho”, surte efeito positivo sobre o VRB, pois percebe-se uma linearidade e aumento das buscas nos anos seguintes ao sancionamento da lei. Dentre as 5 regiões brasileiras, o Nordeste foi a mais interessada na temática, possivelmente pelo aumento anual da mortalidade por câncer de boca e pela quantidade de habitantes, sendo a segunda mais populosa do país. **Conclusão:** As campanhas de prevenção e combate aumentam o interesse da população por temáticas em saúde, haja visto os picos de busca nos meses que abarcam essas iniciativas. Este aumento não se relaciona necessariamente com a incidência e/ou prevalência do câncer de boca, mas estimula a população a pesquisar e entender mais sobre sinais e sintomas, visando principalmente o diagnóstico precoce e um melhor prognóstico. O VRB pode ser influenciado pela quantidade de habitantes e pela incidência da doença nas regiões, entretanto, não é

possível elucidar de forma consolidada a sua relação com o nível de escolaridade, o acesso à internet e a exposição a fatores de risco.

Palavras-chave: google trends; neoplasias bucais; informática em saúde pública.

ABSTRACT

Introduction: Oral cancer is the 5th most common malignant neoplasm among Brazilian men. An early diagnosis is crucial and also encompasses the patient's perception of the disease, as it is necessary for them to be aware of the signs and symptoms, harmful habits and lifestyle that may contribute to the development of this pathology. In the last 10 years, the use of Internet data has proved to be fundamental in health informatics, mainly in online research on signs and symptoms of diseases. Online search traffic data on the Google platform is useful in analyzing human behavior by searching for various subjects, including those related to the topic of health. Google Trends is an open tool that makes it possible to evaluate this pattern of behavior, as it provides information on trends and variations in the interest of online searches for keywords and topics searched over time. **Objective:** To analyze the search volume for mouth cancer in Brazil between 2011 and 2021 using Google Trends. **Method:** Through Google Trends, the volume of specific searches for the term “mouth cancer” was analyzed in the “Web Search” mode, within the “Health” category, between Jan/2011 and Dec/2021, adding “Brazil” as location parameter. **Results:** The Northeastern states, in general, searched more about cancer in the established time frame. The months in which the search for the theme was greatest were: November, October and May. In addition, the Relative Search Volume (VRB) on oral cancer dropped sharply in the critical years of the Covid-19 pandemic. Campaigns to prevent and combat oral cancer, which take place in specific months, influence the search for online information about oral cancer. In this sense, the creation of Law No. 13,230, of December 28, 2015, which underlies the “Red November” campaign, has a positive effect on the VRB, as it is perceived as a linearity and an increase in searches in the years following the sanctioning of this law. Among the 5 Brazilian regions, the Northeast was the most interested in the subject, possibly due to the annual increase in mortality from oral cancer and the number of inhabitants, being the second most populous in the country. **Conclusion:** Prevention and combat campaigns increase the population's interest in health issues, given the peaks in searches in the months that cover these initiatives. This increase is not necessarily related to the incidence and/or prevalence of oral cancer, but encourages the population to research and understand more about signs and symptoms, aiming mainly at early diagnosis and a better prognosis. The VRB can be influenced by the number of inhabitants and the incidence of the disease in the regions, however, it is not possible to elucidate in a consolidated way its relationship with the level of education, internet access and exposure to risk factors.

Keywords: google trends; mouth neoplasms; public health informatics.

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LISTA DE ABREVIATURAS E SIGLAS

PNS	Pesquisa Nacional de Saúde
IBGE	Instituto Brasileiro de Geografia e Estatística
VRB	Volume Relativo de Buscas
DCNT	Doenças Crônicas Não-Transmissíveis
AC	Acre
AL	Alagoas
AP	Amapá
AM	Amazonas
BA	Bahia
CE	Ceará
ES	Espírito Santo
GO	Goiás
MA	Maranhão
MT	Mato Grosso
MS	Mato Grosso do Sul
MG	Minas Gerais
PA	Pará
PB	Paraíba
PR	Paraná
PE	Pernambuco
PI	Piauí
RJ	Rio de Janeiro
RN	Rio Grande do Norte
RS	Rio Grande do Sul
RO	Rondônia
RR	Roraima
SC	Santa Catarina
SP	São Paulo
SE	Sergipe
TO	Tocantins
DF	Distrito Federal

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1. INTRODUÇÃO

No cenário global, o câncer representa cerca de 30% das mortes prematuras por doenças crônicas não transmissíveis (DCNT), especialmente na população adulta entre 30 e 69 anos. No ano de 2018, aproximadamente 18 milhões de pessoas tiveram algum tipo de câncer e 9,6 milhões morreram da doença [1]. O câncer de cabeça e pescoço é o 6º mais comum no mundo, sendo o carcinoma de células escamosas bucal a 5ª neoplasia maligna mais comum entre homens brasileiros, podendo acometer lábio interno, borda de língua, gengivas, palato duro e mole, mucosa jugal e assoalho de boca [2,3].

Quando comparado aos valores globais disponibilizados pelo GLOBOCAN de 2018, o risco estimado desta neoplasia para homens (10,69) e mulheres (3,71) é maior no Brasil, do que a média mundial (6,4 para homens e 2,9 para mulheres). O câncer de boca é mais frequente em países em desenvolvimento. Entretanto, a incidência desta neoplasia pode variar de acordo com alguns fatores como: geolocalização, raça, idade, sexo e situação socioeconômica [4].

Em geral, os maiores impactos do câncer se relacionam com o diagnóstico tardio da doença, o que habitualmente significa um mau prognóstico e baixa sobrevida. Portanto, a detecção precoce e prevenção são elementos essenciais para o controle do câncer de boca [5,6]. Estabelecer um diagnóstico rapidamente depende da percepção do paciente sobre a doença e uma confirmação profissional, de modo a contribuir para maior eficiência do tratamento e manutenção da qualidade de vida. É necessário que os pacientes conheçam sinais e sintomas, hábitos e estilo de vida nocivos que possam contribuir para o desenvolvimento da doença [7].

Nos últimos dez anos, o uso de dados da internet mostrou-se fundamental na informática em saúde, principalmente na pesquisa online sobre sinais e sintomas de doenças, através de plataformas como Twitter ou Pesquisa do Google [8]. A facilidade de acesso e rapidez da internet, consolidam-na como uma fonte popular de informações sobre a saúde [9]. Os dados de tráfego de pesquisa online na plataforma do Google são úteis na análise do comportamento humano, através da busca de diversos assuntos, inclusive os que estão relacionados ao tópico saúde. O Google Trends é uma ferramenta que possibilita a avaliação deste padrão de comportamento, pois fornece informações sobre tendências e variações de interesse de buscas online por palavras-chave e tópicos pesquisados ao longo do tempo [10].

Atualmente, o Google Trends é o recurso mais popular na abordagem de questões e temas da área da saúde através do uso de dados da internet. É uma plataforma online e pública, que fornece informações em tempo real e também arquivadas sobre consultas no Google a partir do ano de 2004. O estudo das consultas do Google é importante para os pesquisadores entenderem e preverem o comportamento humano, visto que as evidências sugerem que os dados online têm correlação com os dados reais de saúde [10].

A busca por informações sobre assuntos influencia no volume de buscas e dita tendências nacionais de pesquisa, uma vez que o estado de saúde, as atitudes e o comportamento da população possuem relação bidirecional com a comunicação e as informações obtidas via internet. O câncer de boca, por sua vez, é uma doença que é frequentemente diagnosticada em estádios clínicos avançados, os quais estão associados a um pior prognóstico e alta taxa de mortalidade dos pacientes. Apesar disso, não há estudos prévios que visaram analisar o comportamento de buscas da população brasileira sobre o câncer bucal na internet. Portanto, a fim de entender o interesse do público brasileiro por essa temática, o objetivo deste estudo foi analisar o volume de busca por câncer de boca no Brasil entre os anos de 2011 e 2021, através do Google Trends.

2. MÉTODOS

A plataforma utilizada foi o Google Trends, na qual inicialmente foi analisado o volume de buscas específicas de modo comparativo pelos termos “Câncer de boca”, “Câncer de língua”, “Câncer de lábio”, “Câncer de gengiva”, na modalidade “Pesquisa Web”, dentro da categoria “Saúde”, entre Jan/2011 e Dez/2021, adicionando “Brasil” no parâmetro de localização. Posteriormente, realizou-se uma nova busca somente com o termo “Câncer de boca” e os mesmos itens na modalidade de busca, categoria e localização. Além dos valores do volume de buscas obtidos, foram utilizados também os gráficos gerados pela interface gráfica do usuário para avaliação inicial das diferenças geográficas e pontuais.

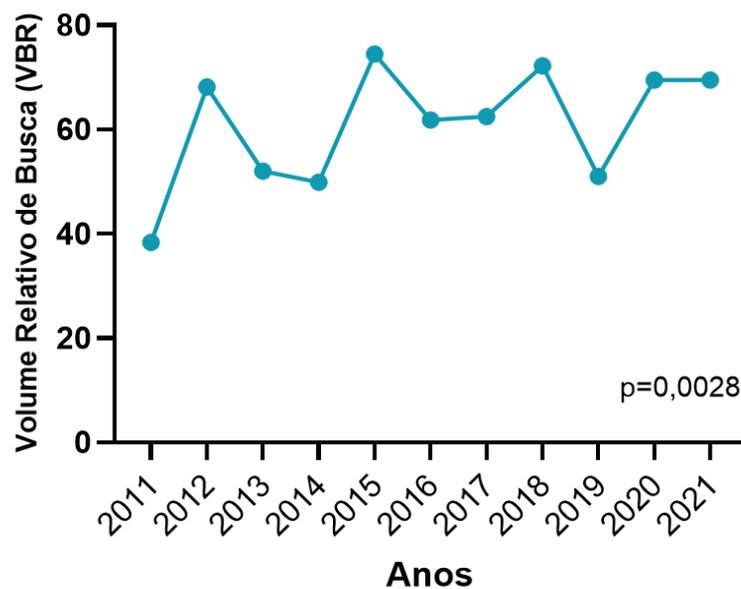
Os dados fornecidos pelo Google Trends não equivalem ao quantitativo exato de pesquisas, estes são dimensionados de 0 a 100, o que se chama de Volume Relativo de Buscas (VRB). A máxima de atividade em um período de tempo é apresentada como 100 e os demais dados de diferentes períodos são apresentados em relação a esse pico; a mínima atividade (0) se dá quando os dados estão ausentes ou inadequados. Os volumes foram avaliados através dos valores dos gráficos fornecidos pela plataforma: gráficos de detalhamento que comparam o volume de buscas entre as sub-regiões; gráficos de interesse no tema ao longo do tempo; gráficos das consultas relacionadas ao termo de pesquisa.

A análise estatística foi realizada no programa GraphPad Prism (GraphPad Software, San Diego, CA, USA), versão 8.4.3. Inicialmente, foi realizada uma análise descritiva dos dados para obtenção de medidas da média (tendência central) e de dispersão (desvio-padrão, valor mínimo e máximo). Para análise de normalidade dos dados, foi realizado o teste de Kolmogorov-Smirnov, onde se observou uma distribuição não paramétrica. Assim, foram utilizados os testes de Mann-Whitney e Kruskal-Wallis para comparar os valores entre as variáveis analisadas, com nível de significância de 5%.

3. RESULTADOS

Entre jan/2011 e dez/2021, o termo de busca mais utilizado para pesquisa de neoplasias malignas orais, dentre os citados, foi “Câncer de boca”. Observou-se ainda que a procura por “Câncer de boca” (Gráfico 1) aumentou ao longo dos anos. Embora não tenha uma linearidade do VRB, os valores dos picos de buscas exibidos na Tabela 1 foram significativos ($p = 0,0028$). Além disso, existe um quantitativo expressivo de pesquisas relacionadas, principalmente em busca de entender quais sinais e sintomas do câncer de boca (Gráfico 2).

Gráfico 1. Volume Relativo de Buscas para o termo “Câncer de boca” de acordo o período analisado (2011-2021).



Fonte: Autores.

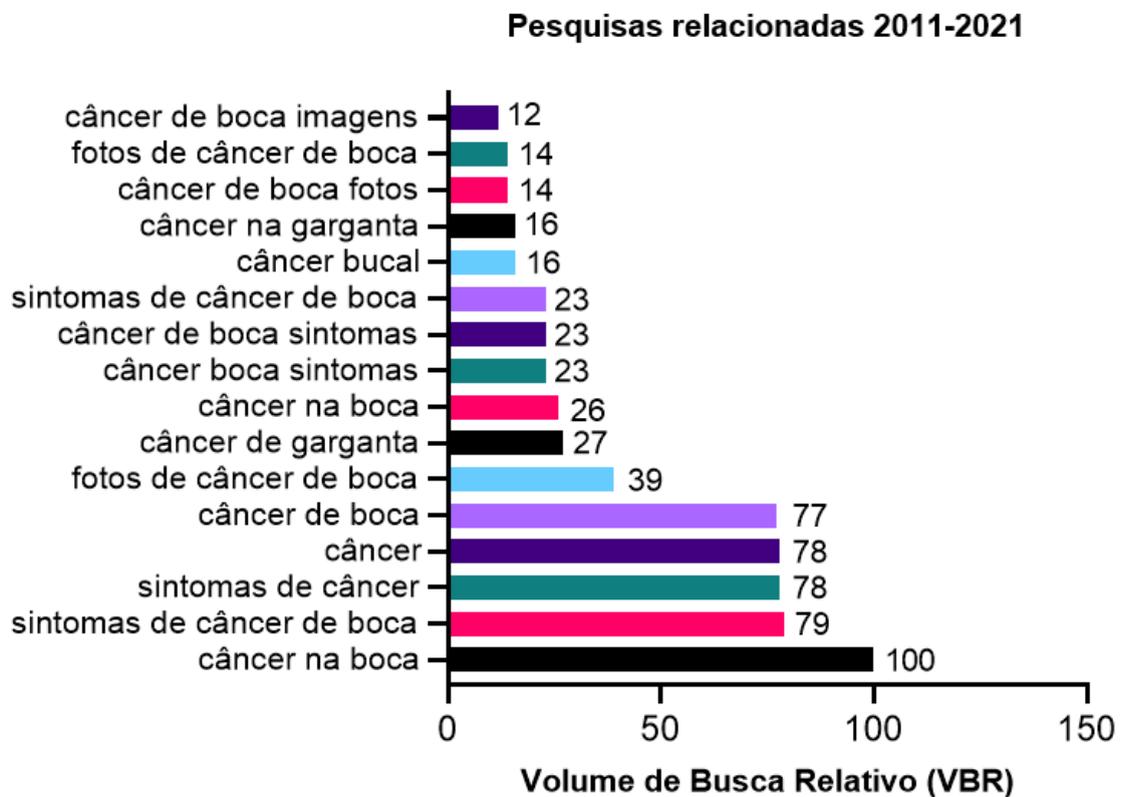
Tabela 1 – Picos do volume relativo de busca sobre câncer bucal nos anos 2011 a 2021.

Anos	Média (Mín.-Máx.)	p^*
2011	38,3 ± 29,8 (0-100)	0,0028
2012	68,2 ± 18,9 (37-100)	
2013	52 ± 27,2 (0-100)	

2014	49,9 ± 29,3 (0-100)
2015	74,5 ± 18,9 (29-100)
2016	61,8 ± 15,7 (35-100)
2017	62,5 ± 20,8 (36-100)
2018	72,3 ± 18,9 (42-100)
2019	51 ± 17,7 (30-100)
2020	69,5 ± 15,5 (48-100)
2021	69,5 ± 14,1 (52-100)

Legenda: ± – desvio padrão; Mín. – Mínimo; Máx. – Máximo; *p* – Kruskal Wallis.

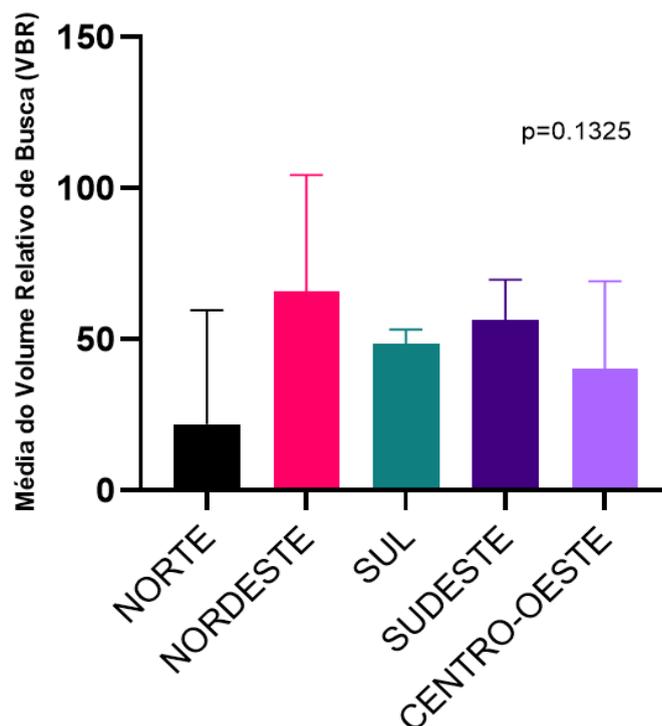
Gráfico 2. Temáticas de interesse dentro do tópico “câncer de boca” e seus respectivos Valores Relativos de Busca no Google Trends.



Fonte: Autores.

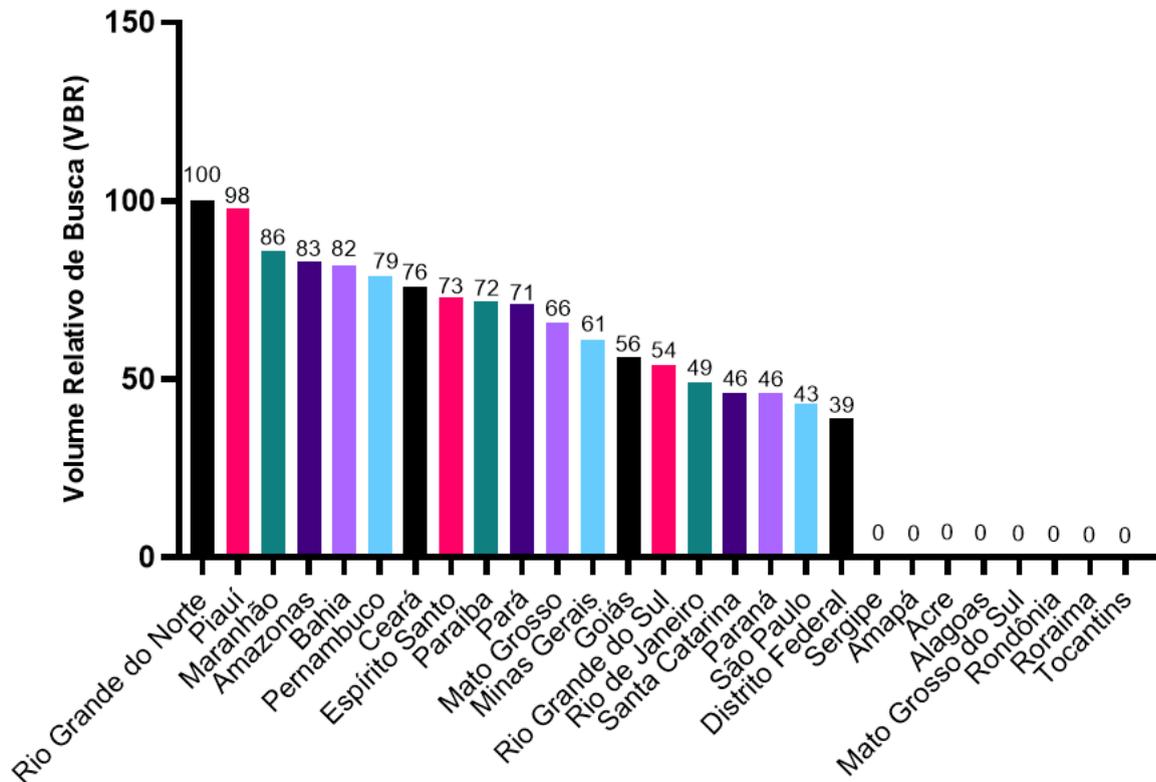
A região brasileira com maior VRB sobre câncer de boca foi o Nordeste, seguida da região Sudeste, Sul, Centro-Oeste e Norte, respectivamente (Gráfico 3). Os estados brasileiros com o maior VRB, em ordem decrescente: Rio Grande do Norte (RN), Piauí (PI), Maranhão (MA), Amazonas (AM), Bahia (BA), Pernambuco (PE), Ceará (CE), Espírito Santo (ES), Paraíba (PB), Pará (PA), Mato Grosso (MT), Minas Gerais (MG), Goiás (GO), Rio Grande do Sul (RS), Rio de Janeiro (RJ), Santa Catarina (SC), Paraná (PR), São Paulo (SP), Distrito Federal (DF). Os estados brasileiros com volume mínimo de buscas (0), foram: Sergipe (SE), Amapá (AP), Acre (AC), Alagoas (AL), Mato Grosso do Sul (MS), Rondônia (RO), Roraima (RR) e Tocantins (TO), como visto no Gráfico 4. A tabela 2 com maiores detalhes o VRB para cada estado de acordo com a região do Brasil.

Gráfico 3. Valor médio de Volume Relativo de Buscas de acordo com as regiões do Brasil.



Fonte: Autores.

Gráfico 4. Volume Relativo de Busca de acordo com cada estado do Brasil.



Fonte: Autores

Tabela 2– Volume de busca relativo médio sobre o câncer bucal nos estados e regiões do Brasil no período de 2011 a 2021.

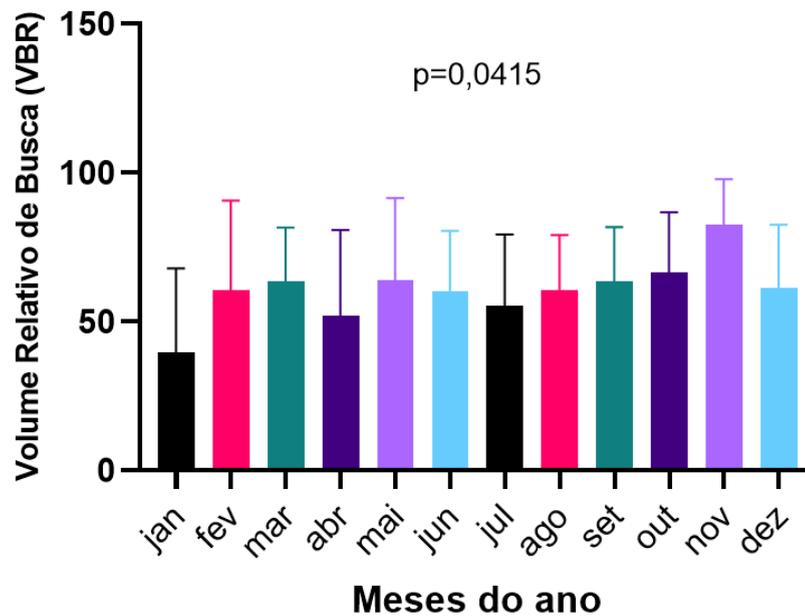
Região	Média (Mín.-Máx.)	<i>p</i> *
Nordeste	65,9 ± 36.3 (0-100)	0.1325
<i>Rio Grande do Norte</i>	100	
<i>Piauí</i>	98	
<i>Maranhão</i>	86	
<i>Bahia</i>	82	
<i>Pernambuco</i>	79	
<i>Ceará</i>	76	
<i>Paraíba</i>	72	

<i>Sergipe</i>	0
<i>Alagoas</i>	0
<hr/>	
Sudeste	56,5 ± 11,5 (43-73)
<i>Espírito Santo</i>	73
<i>Minas Gerais</i>	61
<i>Rio de Janeiro</i>	49
<i>São Paulo</i>	43
<hr/>	
Sul	48,7 ± 3,8 (46-54)
<i>Rio Grande do Sul</i>	54
<i>Sanra Catarina</i>	46
<i>Paraná</i>	46
<hr/>	
Centro-Oeste	53,7 ± 11,1 (39-66)
<i>Mato Grosso</i>	66
<i>Goiás</i>	56
<i>Distrito Federal</i>	39
<i>Mato Grosso do Sul</i>	
<hr/>	
Norte	22 ± 34,9 (0-83)
<i>Amazonas</i>	83
<i>Pará</i>	71
<i>Amapá</i>	0
<i>Acre</i>	0
<i>Rondônia</i>	0
<i>Roraima</i>	0
<i>Tocantins</i>	0
<hr/>	

Legenda: ± – desvio padrão; Mín. – Mínimo; Máx. – Máximo; **p* – Teste de Kruskal-Wallis.

A média de busca por mês (exemplo: soma dos valores de janeiro 2011-2021 e divisão pela quantidade de anos), revelou que os meses com os maiores VRB foram: 1- Novembro (82,63); 2- Outubro (66,72); 3- Maio (64) (Gráfico 5). A tabela 3 mostra o VRB médio mensal e desvio padrão de cada mês do ano entre 2011 e 2021.

Gráfico 5. Valor médio mensal do Volume Relativo de Busca no período de 2011-2021.



Fonte: Autores.

Tabela 3 – Volume de busca relativo mensal médio sobre o câncer bucal nos meses dos anos no período de 2011 a 2021.

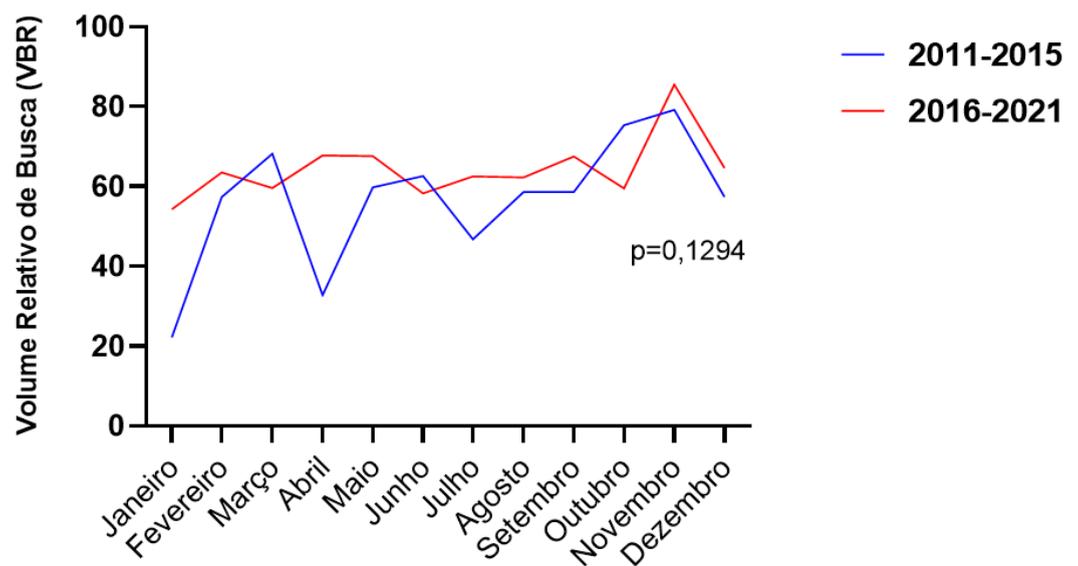
Anos	Média (Mín.-Máx.)	<i>p</i> *
Janeiro	39,7 ± 26,9 (0-88)	0,0415
Fevereiro	60,7 ± 28,5 (0-100)	
Março	63,5 ± 18,2 (39-100)	
Abril	51,9 ± 27,6 (0-100)	
Maio	64 ± 26,3 (0-100)	

Junho	60,3 ± 19,3 (32-100)
Julho	55,4 ± 22,9 (30-100)
Agosto	60,6 ± 18,5 (45-100)
Setembro	63,5 ± 17,5 (36-100)
Outubro	66,7 ± 19,2 (35-100)
Novembro	82,6 ± 14,6 (48-100)
Dezembro	61,4 ± 20,2 (29-100)

Legenda: ± – desvio padrão; Mín. – Mínimo; Máx. – Máximo; **p* – Teste de Kruskal-Wallis

Comparando a média mensal do volume de buscas nos períodos 2011-2015 e 2016-2021 observamos uma discreta crescente e também uma certa linearidade se estabelecendo (Gráfico 6). Os valores correspondentes ao VRB médio e seus desvios-padrão entre o período antes e após o estabelecimento da campanha sobre o câncer de boca no Brasil, o Novembro Vermelho, estão descritos em detalhe na tabela 4.

Gráfico 6. Volume médio mensal de busca nos períodos de 2011-2015 e 2016-2021.



Fonte: Autores.

Tabela 4 – Picos de buscas mensal do volume de busca relativo sobre câncer bucal antes (2011-2015) e depois (2016-2021) da implementação da campanha do câncer de boca (novembro vermelho) no Brasil.

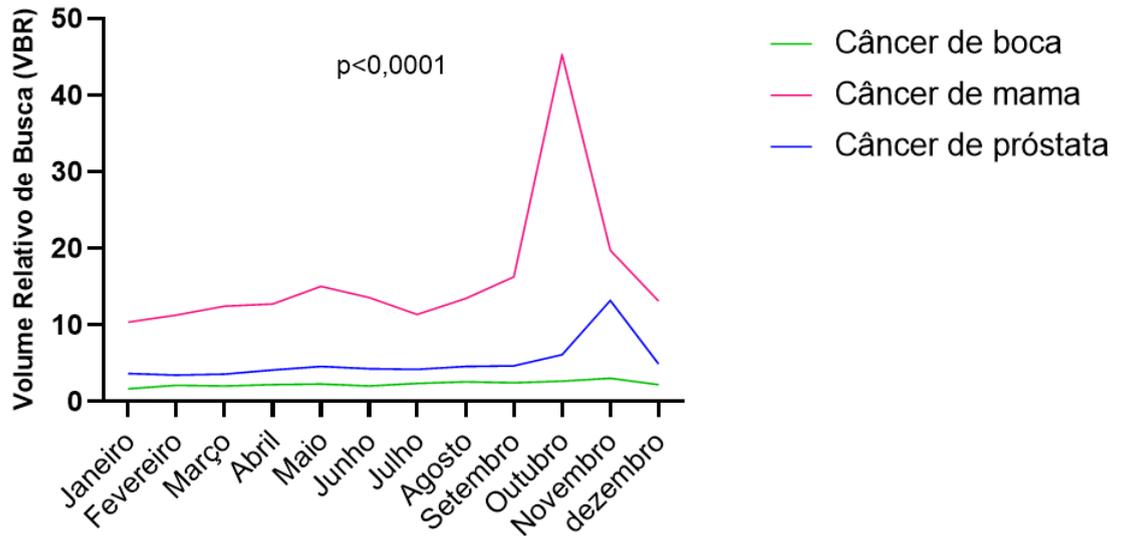
Meses	Período		<i>p</i> *
	2011-2015	2016-2021	
	<i>Média (Mín. - Máx.)</i>	<i>Média (Mín. - Máx.)</i>	
Janeiro	22,2 ± 30,4 (0-57)	54,33 ± 15,5 (42-88)	0.1294
Fevereiro	57,4 ± 39,2 (0-89)	63,5 ± 21,2 (30-100)	
Março	68,2 ± 19,4 (39-100)	59,66 ± 14,3 (45-83)	
Abril	32,8 ± 20,1 (0-62)	67,83 ± 22,4 (30-100)	
Mai	59,8 ± 30,2 (0-81)	67,6 ± 21,9 (36-100)	
Junho	62,6 ± 28,2 (31-100)	58,33 ± 4,1 (50-62)	
Julho	46,8 ± 19,6 (26-75)	62,5 ± 22,9 (35-100)	
Agosto	58,6 ± 16,5 (45-90)	62,33 ± 18,4 (46-100)	
Setembro	58,6 ± 14,8 (36-76)	67,5 ± 18,5 (38-100)	
Outubro	75,4 ± 24,5 (35-100)	59,5 ± 18,5 (48-72)	
Novembro	79,2 ± 17,2 (48-100)	85,5 ± 7,6 (70-100)	
Dezembro	57,4 ± 24,4 (29-100)	64,66 ± 15,2 (45-94)	

: ± – desvio padrão; Mín. – Mínimo; Máx. – Máximo. *p*=Teste de Wilcoxon.

Em comparação às buscas online realizadas pelos termos “Câncer de mama” e “Câncer de próstata”, que são campanhas consolidadas e reconhecidas no sentido da prevenção do câncer e diagnóstico precoce, observa-se que o VRB do câncer de boca é significativamente mais baixo ($p < 0,0001$), mesmo nos meses dedicados à sua prevenção (Gráfico 7 e Tabela 5). Embora, ao longo dos anos, o VRB do câncer de boca tenha aumentado, o VRB para câncer de mama e próstata continuaram maiores ($p < 0,0001$), ainda que houvesse inconstâncias (Gráfico 8). Dentre os três termos de busca, o mais buscado foi “Câncer de mama”, seguido do “Câncer de próstata” e do “Câncer de boca”, ($p < 0,0001$),

como visto no Gráfico 9 e Tabela 6.

Gráfico 7. Volume médio de busca por mês no período de 2011 a 2021 para os termos “câncer de boca”, “câncer de mama” e “câncer de próstata”.



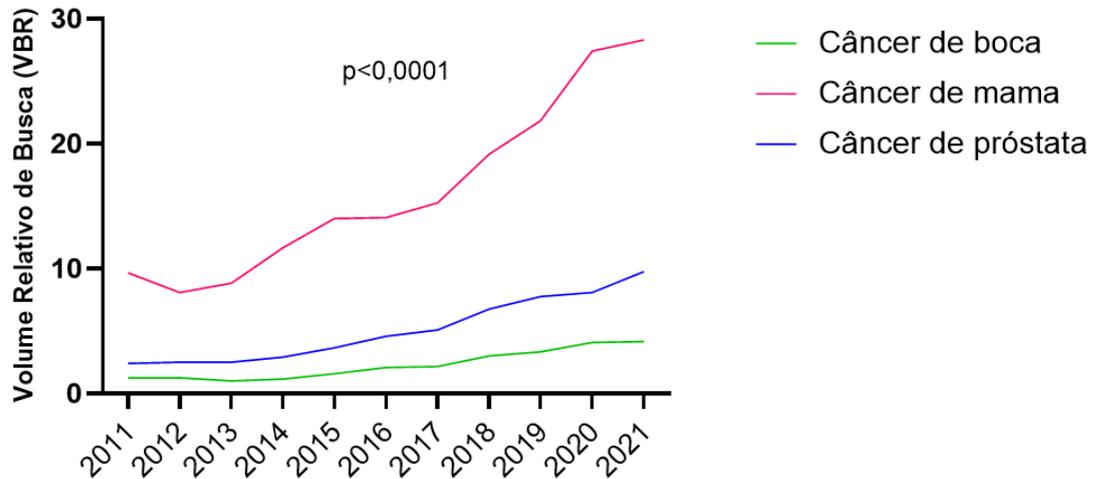
Fonte: Autores.

Tabela 5 - Volume de busca relativo mensal médio para os termos “câncer de boca”, “câncer de mama” e “câncer de próstata” no período de 2011 a 2021.

Meses	“câncer de boca” Média (Mín. - Máx.)	“câncer de mama” Média (Mín. - Máx.)	“câncer de próstata” Média (Mín. - Máx.)	p
Janeiro	1,6 ± 1,6 (0-5)	10,4 ± 5,3 (4-22)	3,6 ± 2,1 (1-7)	<0,0001
Fevereiro	2,1 ± 1,3 (0-5)	11,3 ± 5,3 (6-23)	3,5 ± 1,9 (1-7)	
Março	2 ± 1,4 (0-4)	12,5 ± 3,9 (7-20)	3,5 ± 2,1 (0-7)	
Abril	2,2 ± 1,0 (1-4)	12,7 ± 4,7 (8-23)	4,1 ± 1,6 (2-7)	
Maio	2,3 ± 1,4 (1-5)	15 ± 3,6 (11-21)	4,5 ± 1,9 (2-8)	
Junho	2 ± 1,3 (0-4)	13,5 ± 5,1 (8-23)	4,3 ± 1,9 (2-8)	
Julho	2,4 ± 1,0 (1-4)	11,4 ± 4,9 (6-19)	4,2 ± 2,1 (1-8)	
Agosto	2,5 ± 1,2 (1-5)	13,5 ± 4,3 (8-20)	4,5 ± 1,9 (1-7)	
Setembro	2,5 ± 1,1 (1-4)	16,3 ± 6,2 (8-27)	4,6 ± 2,6 (2-10)	
Outubro	2,6 ± 1,1 (1-4)	45,3 ± 25,4 (14-100)	6,1 ± 3,0 (2-11)	
Novembro	3 ± 1,3 (2-5)	19,7 ± 8,7 (7-37)	13,2 ± 7,2 (2-27)	
Dezembro	2,2 ± 1,2 (0-4)	13,1 ± 7,0 (5-27)	4,9 ± 3,0 (1-10)	

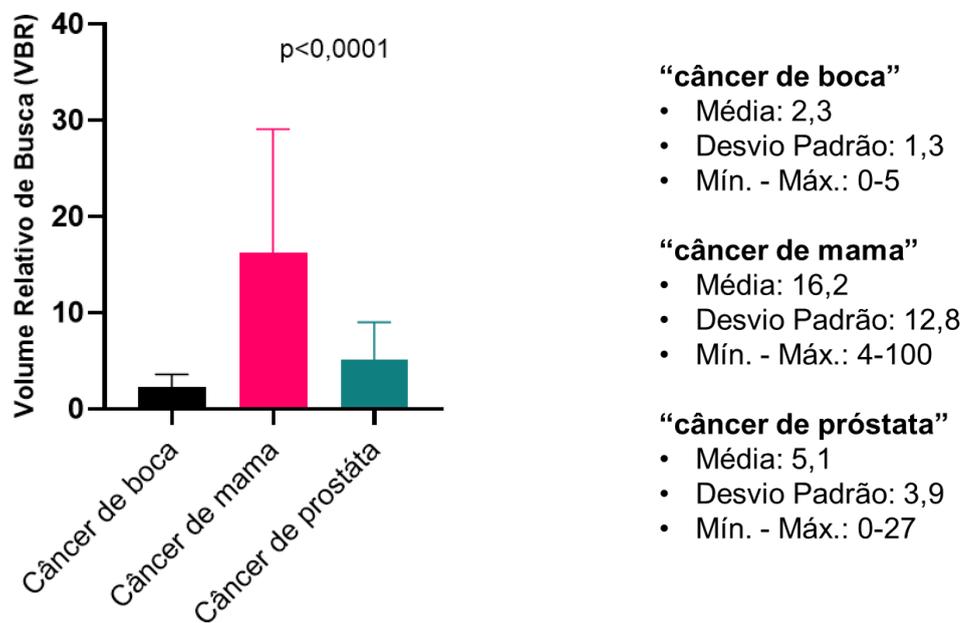
Legenda: ± – desvio padrão; Mín. – Mínimo; Máx. – Máximo; *p – Teste de Kruskal-Wallis.

Gráfico 8. Volume médio de busca por ano no período de 2011 a 2021 para os termos “câncer de boca”, “câncer de mama” e “câncer de próstata”.



Fonte: Autores.

Gráfico 9. Volume médio de busca no período de 2011 a 2021 para os termos “câncer de boca”, “câncer de mama” e “câncer de próstata”.



Fonte: Autores.

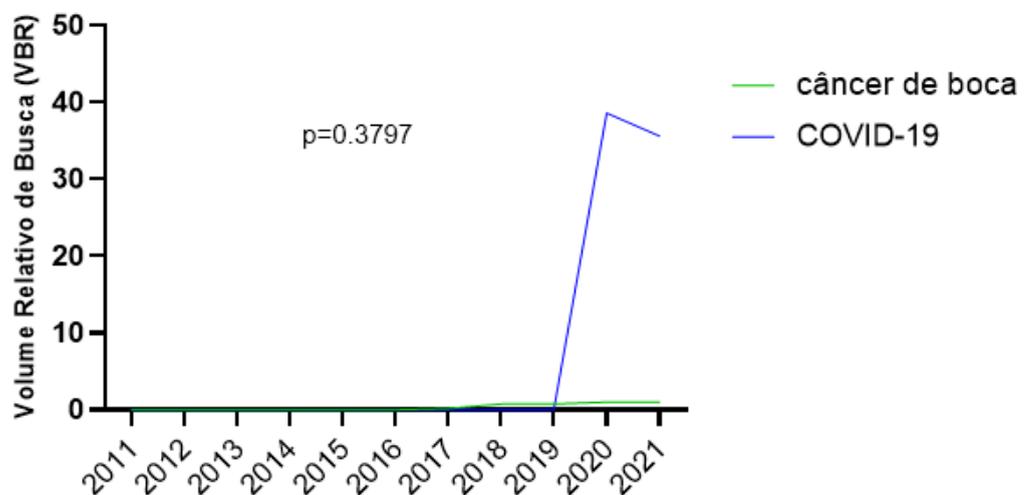
Tabela 6 -Volume de busca relativo anual médio para os termos “câncer de boca”, “câncer de mama” e “câncer de próstata” no período de 2011 a 2021.

Anos	“câncer de boca” Média (Mín. - Máx.)	“câncer de mama” Média (Mín. - Máx.)	“câncer de próstata” Média (Mín. - Máx.)	<i>p</i>
2011	1,3 ± 0,7 (0-2)	9,7 ± 2,8 (7-16)	2,4 ± 0,9 (1-4)	<0,0001
2012	1,3 ± 0,6 (0-2)	8,1 ± 2,5 (5-14)	2,5 ± 0,8 (1-4)	
2013	1 ± 0,7 (0-2)	8,8 ± 4,4 (4-22)	2,5 ± 1,5 (1-7)	
2014	1,2 ± 0,7 (0-2)	11,7 ± 6,9 (6-33)	2,9 ± 2,6 (1-11)	
2015	1,6 ± 0,5 (1-2)	14 ± 9,5 (9-44)	2,6 ± 3,7 (0-12)	
2016	2,1 ± 0,5 (1-3)	14,1 ± 7,1 (9-37)	4,6 ± 2,7 (2-13)	
2017	2,2 ± 0,6 (1-3)	15,25 ± 8,5 (8-42)	5,1 ± 2,5 (4-13)	
2018	3 ± 0,7 (1-4)	19,2 ± 9,8 (11-50)	6,8 ± 3,2 (4-17)	
2019	3,3 ± 0,8 (2-5)	21,8 ± 11,9 (15-59)	7,8 ± 3,9 (5-20)	
2020	4,1 ± 0,6 (3-5)	27,4 ± 22,4 (17-100)	8,1 ± 3,9 (5-20)	
2021	4,2 ± 0,6 (3-5)	28,3 ± 16,5 (19-81)	9,8 ± 5,4 (7-27)	

Legenda: ± – desvio padrão; Mín. – Mínimo; Máx. – Máximo; **p* – Teste de Kruskal-Wallis.

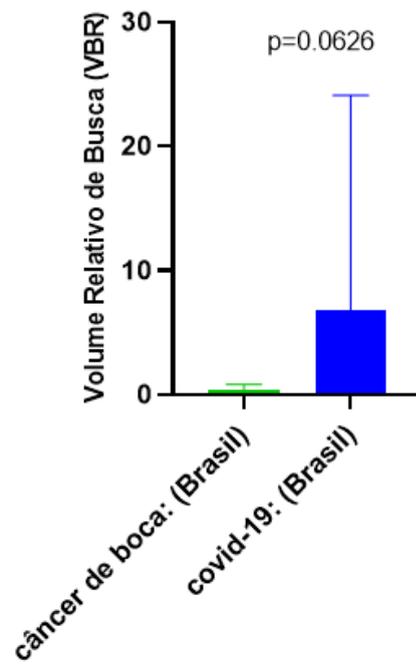
Ao comparar com o termo Covid-19, observou-se uma quase extinção dos volumes de busca sobre câncer de boca em todo lapso temporal (Gráficos 10 e 11).

Gráfico 10. Volume médio de busca por ano no período de 2011 a 2021 para os termos “câncer de boca” e “COVID-19”.



Fonte: Autores.

Gráfico 11. Volume médio de busca sobre o câncer de boca e a covid-19 no período de 2011 a 2021.



Fonte: Autores.

4. DISCUSSÃO

A internet é um elemento crucial na interface informática-saúde, principalmente na pesquisa online sobre sinais e sintomas de doenças, através de plataformas de pesquisa como o Google [8]. A facilidade de acesso e rapidez da internet, consolidam-na como uma fonte popular de informações sobre a saúde, que têm sido amplamente utilizada [9].

Os dados obtidos na Web demonstraram grande utilidade para área da saúde, a “Infoepidemiologia”, se refere à identificação e monitoramento das informações que estão sendo buscadas na internet, sendo capaz de fornecer métricas do comportamento, opiniões e conhecimento do público, com o objetivo final de informar e embasar questões de saúde e políticas públicas [11,12].

Na “Infovigilância”, os dados obtidos são utilizados para entender a demanda das informações que estão sendo buscadas, a tomar como exemplo o impacto de campanhas de saúde pública [11]. O Google Trends oferece acesso fácil e barato para a vigilância do comportamento de busca online sobre temas na área da saúde [13]. Portanto, entende-se que é possível para agências e órgãos públicos monitorarem a eficácia ou o alcance de uma campanha de saúde [12].

No Brasil, a Lei No 13.230, de 28 de dezembro de 2015 institui a promoção da semana nacional do câncer bucal, celebrada anualmente na primeira semana de Novembro, com o intuito principal de estimular ações preventivas e campanhas educativas relacionadas ao câncer bucal, servindo como base para a campanha do Novembro Vermelho [14]. Sendo a prevenção e a detecção inicial etapas cruciais no combate ao câncer de boca, os profissionais da área e a mídia são vistos como potenciais propagadores de informações sobre saúde [15]. Por conta da crescente dos casos de câncer no Brasil, campanhas de conscientização e prevenção têm sido criadas com o objetivo de reduzir os impactos dos cânceres na população [16].

A nível global, considerando o termo de busca “Oral cancer”, correspondente em inglês do termo “Câncer de boca”, os maiores sítios de pesquisa estão no continente asiático. A Índia (dentre os anos de 2004 e 2014) foi o país que mais pesquisou sobre câncer de boca, em consonância com o contexto nacional, visto que 9% das mortes por DCNT na Índia são por cânceres, incluindo com frequência o câncer de boca em homens [17,18]. O

estudo de Patthi e colaboradores, indicou Taiwan como a região com o maior VRB sobre o câncer de boca, informação compatível com a realidade dos taiwaneses, visto que desde 1991 o câncer bucal está entre as 10 principais causas de morte do país [19].

Em Setembro de 2010, na Irlanda, o Dia de Conscientização do Câncer de Boca foi instituído para promover a conscientização pública sobre sinais suspeitos da doença. Ao analisar o volume de buscas de pesquisa para os termos “Oral cancer” e “Mouth Cancer” pelo Google Trends, percebeu-se um aumento significativo ($p < 0,001$), atingindo o pico no mês de Setembro de 2010. Nos anos de 2012 e 2013 houve uma redução progressiva das atividades em relação às de 2011, ano em que houve um apoio e atenção maior da Associação Irlandesa de Odontologia e também da cobertura dos noticiários locais [20].

Nas Filipinas, houve um pico de buscas por câncer de boca no mês em um período específico, neste é celebrado o “Mês Nacional de Saúde Bucal”, que ocorre em Fevereiro. De modo geral, o interesse pelo câncer bucal nas Filipinas manteve-se estável entre 2010 e 2018, em 2019 houve um aumento e as expectativas eram de ascensão em 2020 [21].

Evento semelhante no Brasil, pois dentre os três meses que obtiveram os maiores VRB sobre o câncer de boca, em dois deles (Novembro e Maio), ocorrem campanhas de conscientização a doença, fato que pode estar estritamente relacionado ao aumento de interesse despertado nessas épocas específicas do ano. Outra questão a ser considerada acerca das campanhas, é o aumento e linearidade do volume de buscas, quando se compara os períodos antes (2011-2015) e após (2016-2021) o sancionamento da Lei nº 13.230 de 28 de dezembro de 2015, traduzido como maior constância de interesse na temática ao longo do ano e o pico de buscas em Novembro.

À análise das tendências de buscas, o termo “Câncer de boca” no Brasil, foi o mais pesquisado que “Câncer de lábio”, “Câncer de língua” e “Câncer de gengiva”, provavelmente porque a boca é uma estrutura que envolve todas as demais citadas. Além do termo de busca propriamente dito, pesquisas relacionadas foram feitas para compreender melhor os sinais e sintomas da doença. Neste sentido, a maioria dos termos utilizados englobam pesquisa por “sintomas” e “fotos”, como por exemplo: sintomas de câncer de boca e fotos de câncer de boca. Demonstrando interesse do público pela apresentação clínica da doença, fator crucial para a detecção precoce e melhor prognóstico.

Segundo os dados do IBGE (Instituto Brasileiro de Geografia e Estatística) entre os anos de 2019 e 2021, o acesso à Internet no Brasil foi ampliado, contudo ainda não é uma realidade para toda a população [22]. Dentre as regiões brasileiras, o Nordeste tem a menor porcentagem de uso de internet nos domicílios (85,2%), ficando atrás do Norte (85,5%), Sul (91,5%), Sudeste (92,5%) e Centro-Oeste (93,4%). Entretanto, o Nordeste ficou à frente das demais regiões no volume de buscas sobre o câncer de boca, uma possível explicação para este fato é a densidade populacional da região, que é a segunda mais populosa do Brasil; enquanto a região Norte, foi a que menos pesquisou. A prévia do Censo Demográfico 2022, revelou que a região mais populosa do Brasil é a Sudeste, seguida respectivamente pelo Nordeste, Sul, Norte e Centro-Oeste. A relação entre quantidade de habitantes e VRB parece seguir parcialmente como diretamente proporcional. Entretanto, apenas este parâmetro não é o suficiente para entender a dinâmica de pesquisa online no país.

Dentre os 10 estados brasileiros que mais pesquisaram, 7 são do Nordeste, 2 do Norte e 1 do Sudeste. Segundo o estudo de Perea e colaboradores (2018), embora haja um coeficiente médio relativamente baixo (1,60/100.000 hab.), a taxa de mortalidade do câncer de boca aumentava em média 6,9% ao ano no Nordeste, enquanto nas demais regiões houve redução ou estabilidade. O aumento na taxa de mortalidade pode ser pela melhoria do sistema de informação e conseqüentemente maior registro de óbitos para os cálculos, ou pela exposição a fatores de risco [23]. De modo geral, a crescente na taxa de mortalidade também pode explicar parcialmente o maior interesse do Nordeste nas buscas sobre câncer de boca. A alta incidência de câncer no Sul e Sudeste pode ter influência com o interesse sobre o tema e conseqüentemente o VRB destas regiões.

Sobre a exposição aos fatores de risco, especialmente o consumo de álcool e tabaco no Brasil, a PNS (Pesquisa Nacional de Saúde) de 2019 mostra que a ingestão de bebidas alcólicas é mais prevalente nas regiões Sul e Sudeste, enquanto o tabagismo é mais prevalente nas regiões Sul, Centro-Oeste e Sudeste [24]. A região Norte detém as menores taxas de consumo de álcool e tabaco e também os menores índices de buscas por câncer de boca, o que poderia implicar uma relação diretamente proporcional entre estes dois fatores de risco e o VRB. Em contraponto, o Nordeste tem a segunda menor taxa de consumo de álcool e tabaco, e é a região brasileira que mais pesquisa sobre câncer de boca, elucidando uma relação inversamente proporcional entre fatores de risco e VRB. Portanto, a relação de influência entre exposição a fatores de risco e volume de busca sobre câncer de boca, não é totalmente compreendida e consolidada.

A relação entre nível de escolaridade e VRB não se apresenta de maneira esclarecida, pois no Nordeste se apresenta de forma inversamente proporcional, uma vez que o nível de escolaridade é menor, ou seja, a taxa de analfabetismo é maior no Nordeste (13,9%). O Centro-Oeste tem a segunda menor porcentagem de analfabetos (4,9%), ou seja, nível de escolaridade alto e, em contraponto, o segundo menor VRB, havendo também uma relação inversamente proporcional. O Sul e Sudeste apresentam os melhores índices de escolaridade (taxa de analfabetismo 3,3%) e também altos índices de VRB. O Norte possui a segunda maior porcentagem de analfabetos (7,6%) e o menor VRB, havendo uma lógica de proporcionalidade também.

Existem também campanhas e mobilizações regionais, estaduais ou municipais, a exemplo do estado do Rio Grande do Sul (RS), que sancionou a Lei Estadual nº 12.535/06 de 14 de Junho de 2006, incentivando a prevenção e o combate ao câncer de boca e embasa a campanha do Maio Vermelho, ponto que justificaria um possível maior interesse do RS pelo tema. Entretanto, o RS fica em 14º lugar quando se observa a média do volume de buscas por estados. Além disso, não existe explicação óbvia para os índices de busca zerados dos estados: SE, AP, AC, AL, MS, RO, RR e TO. Pode-se inferir a inadequação ou ausência dos dados no período em que o estudo foi realizado.

Ao tomar como parâmetro o desempenho do VRB dos termos “Câncer de mama” e “Câncer de próstata”, observa-se que o interesse e informações online sobre câncer de boca é menor, mesmo nos meses em que ocorrem as campanhas de prevenção e combate. As temáticas e campanhas para câncer de mama (Outubro Rosa) e câncer de próstata (Novembro Azul), são mais difundidas popularmente no Brasil, independentemente da sazonalidade de suas campanhas, o que explica o maior interesse em buscas online.

Ao longo dos anos se construiu um cenário favorável de interesse de pesquisa, contudo, com advento da pandemia da Covid-19, instaurada em 2020, houve um desinteresse global em pesquisar informações online sobre o câncer de boca. Durante os anos críticos da pandemia, o VRB foi maior em países desenvolvidos [21]. Quando se compara os volumes de busca, no Brasil, por “Câncer de boca” e “Covid-19”, observa-se picos altíssimos nos anos de 2020 e 2021 sobre a Covid-19 e uma supressão brusca das pesquisas por câncer de boca, evidenciando uma redução na priorização do câncer, em consonância com o cenário mundial.

Além da queda brusca nas buscas online sobre câncer de boca, a urgência da pandemia da Covid-19 implicou alterações nos protocolos de tratamento dos cânceres de

cabeça e pescoço no Brasil. Observou-se uma queda de 35% na média de procedimentos cirúrgicos e um aumento de 50,8% nas médias de radioterapia e quimiorradioterapia, que são adjuvantes do tratamento cirúrgico. Esse fato é traduzido como efeito de medidas restritivas instauradas durante o pico da pandemia e o medo dos pacientes oncológicos de se infectar com o vírus da Covid-19 [25].

Com base nesses achados, é fundamental estimular programas e campanhas públicas para informar a população sobre a doença, destacando ao público os principais fatores de risco e a importância de um diagnóstico precoce, sobretudo em relação ao prognóstico e qualidade de vida do paciente.

Dentro das limitações do estudo e da metodologia utilizada observa-se que os dados inadequados ou ausentes dos estados podem refletir nas médias regionais. Ademais, a plataforma não consegue relacionar termos correspondentes em idiomas diferentes, o que impossibilita a comparação entre países. O VRB pode ser alterado de acordo com a quantidade de termos buscados. Além disso, não existe um valor exato da quantidade de acessos ou busca pelos termos, o que dificulta a interpretação e o manejo dos dados.

5. CONCLUSÃO

No geral, houve um aumento na busca online sobre câncer de boca no Brasil entre os anos de 2011 e 2021. O estudo sugere que as campanhas de prevenção e combate aumentam o interesse da população pela temática, haja visto os picos de busca nos meses que abarcam essas iniciativas.

Além disso, as análises da pesquisa podem servir como parâmetro indicador da eficiência das campanhas sobre câncer de boca no Brasil. Por exemplo, ao se deparar com o VRB de cânceres mais divulgados (de mama e de próstata), infere-se a necessidade de melhorias nas estratégias das campanhas relacionadas ao câncer bucal.

Durante os anos críticos da pandemia da Covid-19, a tendência mundial foi de decréscimo na busca por outras condições de saúde. Em relação às pesquisas sobre câncer de boca, no Brasil, houve uma quase extinção ao comparar o VRB.

A região e os estados do Nordeste demonstraram maior interesse em informações online sobre câncer de boca. O VRB pode ser influenciado pela densidade populacional, pela incidência da doença nas regiões, pela escolaridade, pelo acesso à internet e pela exposição a fatores de risco. Entretanto, não é possível elucidar de forma consolidada a dinâmica destas relações.

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ANEXO B – NORMAS DA REVISTA

**ORAL ONCOLOGY**

A Journal Related to Head & Neck Oncology

AUTHOR INFORMATION PACK

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DESCRIPTION

Oral Oncology is an international interdisciplinary journal which publishes high quality original research, clinical trials and review articles, editorials, and commentaries relating to the etiopathogenesis, epidemiology, prevention, clinical features, diagnosis, treatment and management of patients with **neoplasms** in the **head** and **neck**.

Oral Oncology is of interest to head and neck surgeons, radiation and medical oncologists, maxillo-facial surgeons, oto-rhino-laryngologists, plastic surgeons, pathologists, scientists, oral medical specialists, special care dentists, dental care professionals, general dental practitioners, public health physicians, palliative care physicians, nurses, radiologists, radiographers, dieticians, occupational therapists, speech and language therapists, nutritionists, clinical and health psychologists and counselors, professionals in end of life care, as well as others interested in these fields.

Basic, translational, or clinical Research or Review papers of high quality and that make a contribution to new knowledge are invited on the following aspects of neoplasms arising in the head and neck (including lip, tongue, oral cavity, oropharynx, salivary glands, sinuses, nose, nasopharynx, larynx, skull base, thyroid, and craniofacial region, and the related hard and soft tissues and lymph nodes):

- **Etiopathogenesis:** natural history of cancer and pre-cancer; basic pathology, metastatic mechanisms; genetic changes; cellular and molecular changes; microorganisms; growth factors, adhesion and other molecules
- **Epidemiology;** risk factors; biomarkers; protective factors; geographic factors; prevention; screening and intervention
- Clinical features; **orofacial** effects of neoplasms at both local and distant sites; tumor staging and grading
- Diagnosis; **detection** of **cancer** and pre-cancer; cellular and molecular markers for diagnosis; advances in **imaging** and other functional diagnostic modalities for cancer and pre-cancer
- **Management** and **Prognosis;** clinical, cellular and molecular markers for prognosis; **treatment** options including surgical, lasers, photodynamic therapy, cryosurgery, micro-vascular and other forms of surgery, medical, radiotherapy, chemotherapy, immunotherapy, biological and gene therapy advances; molecular targets and new therapeutics (new cytotoxics and molecular-targeted therapies); multimodality treatment; advances in reconstruction and rehabilitation, including flaps and grafts, alloplasty, bone and connective tissue biology; multidisciplinary teamwork in cancer care and **oral health care**.
- Quality of life issues; issues of consent; psychosocial aspects; patient and health professional information; patient involvement; psychological interventions, improving outcomes; the prevention,

diagnosis and management of complications, including, pain, hemorrhage, dysfunction, deformity, osteoradionecrosis, xerostomia, and others; rehabilitation; palliative and end of life care; and support teamwork.

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Sex generally refers to a set of biological attributes that are associated with physical and physiological features (e.g., chromosomal genotype, hormonal levels, internal and external anatomy). A binary sex categorization (male/female) is usually designated at birth ("sex assigned at birth"), most often based solely on the visible external anatomy of a newborn. Gender generally refers to socially constructed roles, behaviors, and identities of women, men and gender-diverse people that occur in a historical and cultural context and may vary across societies and over time. Gender influences how people view themselves and each other, how they behave and interact and how power is distributed in society. Sex and gender are often incorrectly portrayed as binary (female/male or woman/man) and unchanging whereas these constructs actually exist along a spectrum and include additional sex categorizations and gender identities such as people who are intersex/have differences of sex development (DSD) or identify as non-binary. Moreover, the terms "sex" and "gender" can be ambiguous—thus it is important for authors to define the manner in which they are used. In addition to this definition guidance and the SAGER guidelines, the [resources on this page](#) offer further insight around sex and gender in research studies.

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[1] Van der Geer J, Hanraads JAJ, Lupton RA. The art of writing a scientific article. *J Sci Commun* 2010;163:51–9.

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