PONTIFÍCIA UNIVERSIDADE CATÓLICA DO PARANÁ
ESCOLA DE MEDICINA E CIÊNCIAS DA VIDA
PROGRAMA DE PÓS-GRADUAÇÃO EM ODONTOLOGIA
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LETÍCIA MACHADO BERRETTA

ANÁLISE DE POSTAGENS SOBRE O TRATAMENTO ORTODÔNTICO: A PERSPECTIVA NAS MÍDIAS SOCIAIS

Curitiba
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Dissertação apresentada ao Programa de Pós-Graduação em Odontologia da Pontifícia Universidade Católica do Paraná, como parte dos requisitos para obtenção do título de Mestre em Odontologia, Área de Concentração em Clínica Odontológica Integrada (Subárea Ortodontia).

Orientador: Prof. Dr. Orlando Tanaka

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Análise de postagens sobre o tratamento ortodôntico: a perspectiva nas mídias sociais

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Resumo

Objetivos: Avaliar por meio de *hashtags* os conteúdos publicados nas redes sociais sobre a Ortodontia e identificar quais as perspectivas dos pacientes acerca do tratamento ortodôntico. **Métodos:** A busca nas plataformas Instagram e X (antigo Twitter) foi realizada por meio das *hashtags #braces, #invisalign, #orthodontics* e *#orthodontist.* Os dados foram coletados durante sete semanas, sem restrições de idioma ou localização. Os dados foram analisados por meio de análises qualitativa e quantitativa. A análise qualitativa visou à categorização em temas de acordo com os conteúdos encontrados nas postagens. Para análise quantitativa, o teste de independência qui-quadrado de Pearson com valor ajustado pelo método de Bonferroni foi utilizado. O nível de significância considerado foi $p<0,05$. **Resultados:** Foram localizadas 18.605 postagens, sendo 17.971 (96,60%) realizadas no Instagram e 634 no X (3,40%). Destas postagens, 89,52% foram realizadas por cirurgiões-dentistas ou clínicas odontológicas, 3,86% por empresas de produtos odontológicos e 0,82% por pacientes durante o tratamento ortodôntico. Foram classificados cinco temas principais nas publicações dos pacientes: “relato positivo sobre o tratamento ortodôntico” (40,53%), “entusiasmo em iniciar o tratamento” (20,26%), “relato de ansiedade devido ao tratamento ortodôntico” (19,60%), “queixas e limitações sobre tratamento” (16,34%) e “relato neutro sobre o tratamento ortodôntico” (3,27%). A análise estatística mostrou não haver diferenças significativas entre os conteúdos publicados nas plataformas ($p>0,05$). **Conclusões:** Observou-se grande presença de cirurgiões-dentistas nas redes sociais. Entre as postagens de pacientes em tratamento ortodôntico o tema mais encontrado foi “relato positivo sobre o tratamento ortodôntico”. Não foram identificadas discrepâncias entre os conteúdos das postagens realizadas no X e no Instagram.

Palavras-chave: Mídias Sociais. Ortodontia. Uso da Internet.

Abstract

Objectives: To assess content published on social media platforms related to orthodontics using hashtags and identify patients' perspectives on orthodontic treatment. **Methods:** The search on X (formerly Twitter) and Instagram was conducted using the hashtags #braces, #invisalign, #orthodontics, and #orthodontist. Data were collected over a seven-week period, with no language or location restrictions. Data were analyzed using both qualitative and quantitative analyses. Qualitative analysis involved categorization into themes based on the content found in the posts. For quantitative analysis, the Pearson chi-squared test with Bonferroni-adjusted p-values was used, with a significance level of $p<0.05$. **Results:** A total of 18,605 posts were located, of which 17,971 (96.60%) were made on Instagram and 634 on X (3.40%). Among them, 89.52% were posted by Dentists or dental clinics, 3.86% by dental product companies, and 0.82% by patients undergoing orthodontic treatment. Patients' posts were classified into five main themes: "positive reports about orthodontic treatment" (40.53%), "excitement about starting treatment" (20.26%), "anxiety report due to orthodontic treatment" (19.60%), "complaints and limitations regarding treatment" (16.34%) and "neutral reports about orthodontic treatment" (3.27%). Statistical analysis showed no significant differences between the content of posts on X and Instagram ($p>0.05$). **Conclusions:** There was a large presence of dentists on social media. Among patients undergoing orthodontic treatment posts, the most common theme was “positive report about orthodontic treatment”. No discrepancies were identified between the content of posts published on X and Instagram.

Keywords: Social Media. Orthodontics. Internet Use.

Introdução

Atualmente, há 4,88 bilhões de usuários ativos de mídias sociais ao redor do mundo, o que representa mais de 60% da população mundial.[1] Esta quantidade expressiva de usuários pode ser justificada pela viabilização de uma comunicação dinâmica e compartilhamento de experiências em tempo real entre os usuários das redes sociais.[2] Inicialmente, as redes sociais *online* tiveram foco na disseminação unidirecional de informações em larga escala, através de portais e *sites*, mas consolidaram-se como plataformas interativas que permitem relações interpessoais.[3] Deste modo, as mídias sociais dependem da colaboração de seus usuários para fomentar tanto o conteúdo como o compartilhamento de publicações.[4]

Na área da saúde, a larga utilização das mídias sociais possibilitou seu emprego no meio acadêmico como valiosa fonte e meio de disseminação de pesquisas científicas.[5-7] O estudo do comportamento do paciente em tratamento ortodôntico em plataformas de redes sociais pode viabilizar maior conhecimento de sua perspectiva acerca do seu tratamento, suas motivações e suas queixas.[8] Logo, ao compreender as queixas mais comuns relatadas, o ortodontista também deve oferecer soluções às insatisfações, para aumentar a satisfação dos pacientes com o tratamento.[9]

Além disso, as redes sociais também são utilizadas pelos pacientes como ferramenta para busca de informações sobre tratamentos odontológicos.[10] Dentre as principais pesquisas sobre tratamento ortodôntico estão a procura por referências sobre os resultados, conhecer diferentes tipos de aparelhos e consulta de informações práticas sobre o tratamento.[8]

O primeiro estudo que analisou o conteúdo de publicações relacionadas à Ortodontia nas redes sociais avaliou postagens publicadas na Nova Zelândia, e concluiu que à medida em que o tratamento se aproxima do fim, os comentários dos pacientes se tornam mais positivos.[11] Outro estudo que investigou postagens em inglês nas redes sociais concluiu que, no tratamento com alinhadores, a fase de pré-tratamento envolve altas expectativas, e a fase de tratamento é marcada pelo surgimento de experiências negativas, que são amplamente compartilhadas nas redes sociais.[9] Ainda, outra análise realizada com postagens no idioma alemão

revelou que diferentes plataformas de mídias sociais podem levar a comportamentos específicos de seus usuários.[12]

No entanto, até o momento nenhum estudo investigou amplamente a perspectiva do paciente em tratamento ortodôntico publicada nas mídias sociais, sem restrições geográficas ou de idioma. Logo, objetivo deste estudo é de identificar e classificar as perspectivas dos pacientes acerca do tratamento ortodôntico nas redes sociais, além de realizar um levantamento de postagens relacionadas à Ortodontia.

Material e Métodos

Este é um estudo observacional transversal baseado em análise de conteúdo de postagens relacionadas à Ortodontia nas redes sociais Instagram e X (antigo Twitter). Não foi necessária submissão ao Comitê de Ética em Pesquisa, uma vez que todas as postagens analisadas no estudo são de acesso público.

Coleta de dados

Estudo piloto foi realizado nas plataformas em janeiro de 2023 com o objetivo de avaliar a viabilidade da pesquisa e identificar as *hashtags* mais frequentemente utilizadas nas plataformas. Após a realização do piloto, a metodologia do trabalho foi então definida. A estratégia de busca utilizada foi a mesma para ambas plataformas, por meio das *hashtags #braces, #invisalign, #orthodontics* e *#orthodontist*, selecionadas com base em artigos anteriores.[5,11]

A coleta dos dados foi realizada por dois pesquisadores (LMB e GGG) treinados por meio do estudo piloto. Quaisquer discordâncias foram resolvidas por meio de um terceiro pesquisador (OT) de modo a se obter um consenso.[5,13,14] Foram coletadas postagens de cada dia da semana (segunda-feira a domingo), durante um período de 7 semanas (15 de fevereiro a 5 de abril de 2023). O intuito foi de coletar o número máximo de postagens de usuários diferentes nas plataformas e de garantir a representação de todos os dias da semana nos dados totais do estudo.[15]

As postagens foram incluídas quando compreendiam conteúdo relacionado à Ortodontia, sem restrições de idioma ou localização. Foi utilizado o *Google*

Translate para tradução dos textos quando necessário (https://translate.google.com).[5] As postagens foram excluídas do estudo quando não tinham relação com a Odontologia ou quando o conteúdo identificado era ambíguo, sem significado ou duplicado.

Análise de dados

O estudo foi conduzido com base em uma abordagem de pesquisa de métodos mistos na qual métodos qualitativos e quantitativos foram utilizados. Primeiramente, todas as postagens foram estruturadas de acordo com a análise de conteúdo qualitativa.[12,16] Apenas partes das postagens coletadas foram analisadas para se obter temas relevantes para o estudo, com adaptação de metodologias anteriores.[11,12]

Posteriormente, todos os dados foram analisados e classificados de acordo com o seguinte sistema de categorias: relato positivo sobre o tratamento ortodôntico; queixas e limitações sobre tratamento; entusiasmo em iniciar o tratamento; relato de ansiedade devido ao tratamento ortodôntico; relato neutro sobre o tratamento ortodôntico.

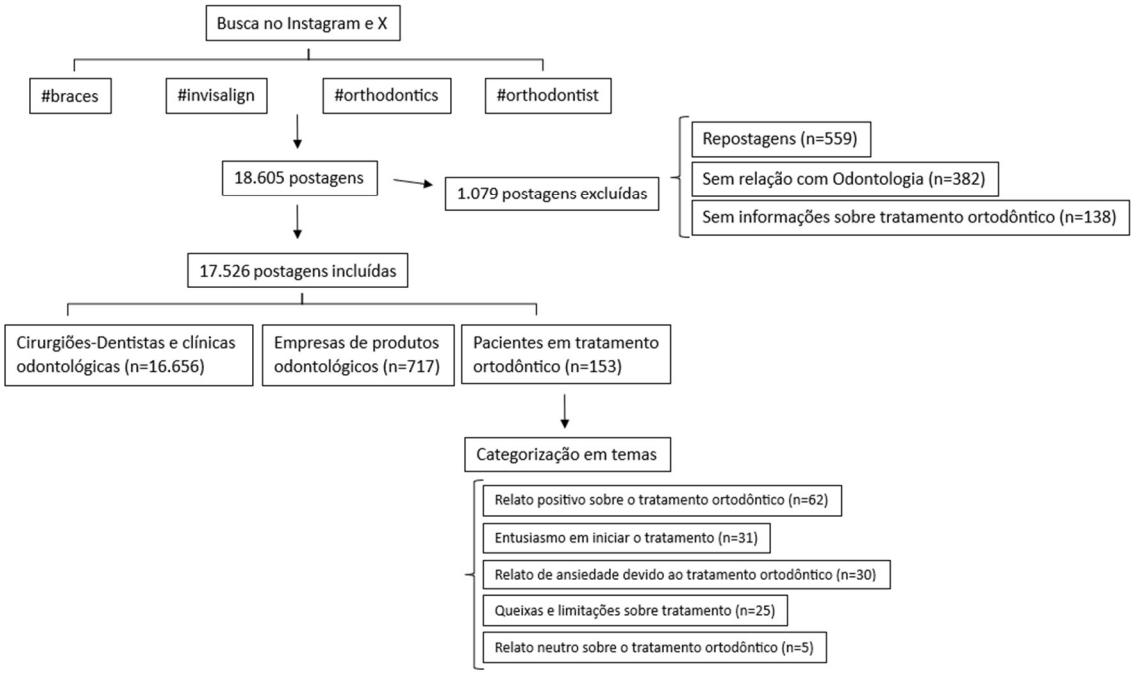
Análise estatística

As análises quantitativas foram utilizadas para investigar possíveis diferenças entre os conteúdos das postagens realizadas nas plataformas X e Instagram, e entre os temas identificados e as *hashtags* utilizadas na publicação. Foi utilizado o teste de independência qui-quadrado de Pearson com valor ajustado pelo método de Bonferroni para testar as diferenças com base em tabelas cruzadas para as variáveis mídias sociais, tipo de relato e *hashtags*. Foi considerado nível de significância de 0,05.

Resultados

Foram localizadas 18.605 postagens publicadas nas plataformas X e Instagram, sendo 16.656 (89,52%) publicadas por perfis de cirurgiões-dentistas e clínicas odontológicas, com fins de publicidade e oferta de serviços. Ainda, 717 (3,86%) publicações foram realizadas por perfis de empresas de produtos odontológicos, 559 (3,00%) eram repostagens/duplicadas, 382 (2,06%) não possuíam relação com a Odontologia, 138 (0,74%) foram postagens que não emitiram uma opinião sobre o tratamento ortodôntico e 153 (0,82%) foram postagens de pacientes que expressavam opinião acerca do tratamento ortodôntico (Figura 1).

Figura 1. Fluxograma com descrição dos dados coletados.

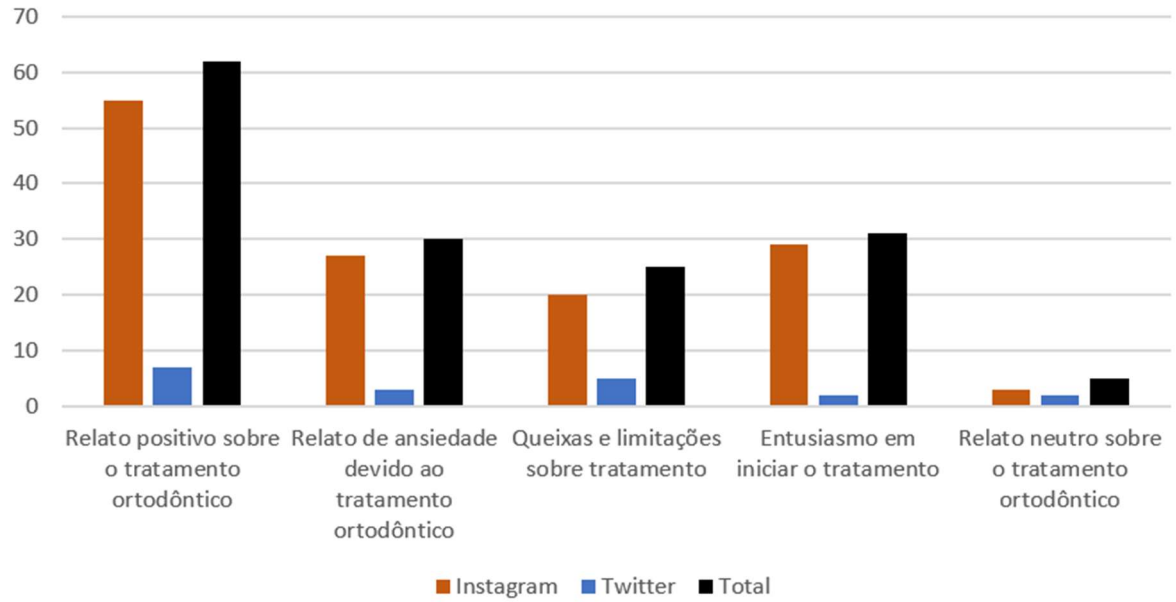


Foram identificados dez idiomas diferentes entre as publicações de pacientes em tratamento ortodôntico. O inglês foi o idioma predominantemente utilizado (81,70% n=125), seguido pelo japonês (7,19% n=11), alemão (2,62%, n=4), chinês (1,96%, n=3), espanhol (1,96%, n=3), malaio (1,31%, n=2), português (1,31%, n=2), dinamarquês (0,65%, n=1), italiano (0,65%, n=1) e ucraniano (0,65%, n=1).

Todas as 153 postagens de pacientes em tratamento ortodôntico foram classificadas nas categorias: “relato positivo sobre o tratamento ortodôntico” (40,53%, n=62), “entusiasmo em iniciar o tratamento” (20,26%, n=31), “relato de

ansiedade devido ao tratamento ortodôntico" (19,60%, n=30), "queixas e limitações sobre tratamento" (16,34%, n=25) e "relato neutro sobre o tratamento ortodôntico" (3,27%, n=5). (Figura 2).

Figura 2. Categorização em temas das postagens de pacientes.



O tema "relato de ansiedade devido ao tratamento ortodôntico" compreendeu as postagens com relatos de ansiedade em iniciar o tratamento, medo de sentir dor, receio do resultado e ansiedade com término do tratamento. O tema "entusiasmo em iniciar o tratamento" compreendeu relatos de animação em iniciar o tratamento ou alegria pela instalação do aparelho ortodôntico. O tema de "queixas e limitações sobre o tratamento" englobou relatos de dor, quebra do aparelho, vergonha do aparelho, queixas sobre os custos do tratamento e dificuldades na fala e na alimentação. O tema "relato positivo sobre o tratamento ortodôntico" compreendeu postagens que relataram alegria para escolha da cor do aparelho, felicidade com o progresso do tratamento e satisfação com o resultado ou com o término do tratamento. Ainda, foram incluídas no tema "relato neutro" postagens que relataram o tratamento ortodôntico sem expressar especificamente um sentimento positivo ou negativo acerca dele. Os exemplos de postagens de cada categoria estão na tabela 1.

Tabela 1. Exemplos de postagens de acordo com cada categoria.

Relato de ansiedade devido ao tratamento ortodôntico	Postagem #65*: I can't wait until I get my #braces.* Postagem #98: *A quick update: 7 trays left to go. Can't wait!!*
Entusiasmo em iniciar o tratamento	Postagem #4: *Just got braces, yay #braces #lund #yay.* *Postagem#114: Super excited to have my braces on!! Things are going great so far! #braces #excited*
Queixas e limitações sobre o tratamento	Postagem #139: *Braces hurts so bad after my every appointment with dentist… #braces.* Postagem #144: *My insurance is covering about $2,000 of my #Invisalign, but I'm sitting here like "Ok, but who gon pay the other thousands??". No international vaca for me this year...*
Relato positivo sobre o tratamento ortodôntico	Postagem #6: *Braces progress! About 2 months of braces and the large front gap is gone. #adultbraces #braces #dentaljourney.* Postagem #78: *I'm done with Invisaling Aligners! My teeth are now in their final positions. I'm super happy with the results! I can't stop smilling. #invisaling #smile*
Relato neutro sobre o tratamento ortodôntico	Postagem #98: *Hi! A quick update. 7 trays left to go! #invisaling.* Postagem #146: Placa 19/60. Quase chegando em 1/3 do tratamento. Agora o tempo de duração que fico com as placas diminui de 15 para 10 dias por movimentarem menos os dentes. Vamos lá. *#invisalign.*

Ao final do período de coleta foram localizadas 17.971 postagens no Instagram (96,60%), enquanto no X foram localizadas 634 postagens (3,40%). No Instagram foram identificadas 16.179 postagens de cirurgiões-dentistas e clínicas odontológicas (86,96%), enquanto no X este número foi de 477 postagens (2,56%).

Ainda, no Instagram coletou-se 134 (0,72%) postagens de pacientes em tratamento ortodôntico, enquanto no X foram identificadas 19 postagens (0,10%).

A comparação entre o volume de postagens e os dias da semana revelou que o dia da semana em que houve o maior número de postagens foi a sexta-feira (21,12%, n=3.940). O domingo foi o dia com a menor quantidade postagens (6,85%, n=1.275). As figuras 3 e 4 descrevem a coleta de dados de acordo com cada dia da semana.

Figura 3. Dados coletados de acordo com os dias da semana.

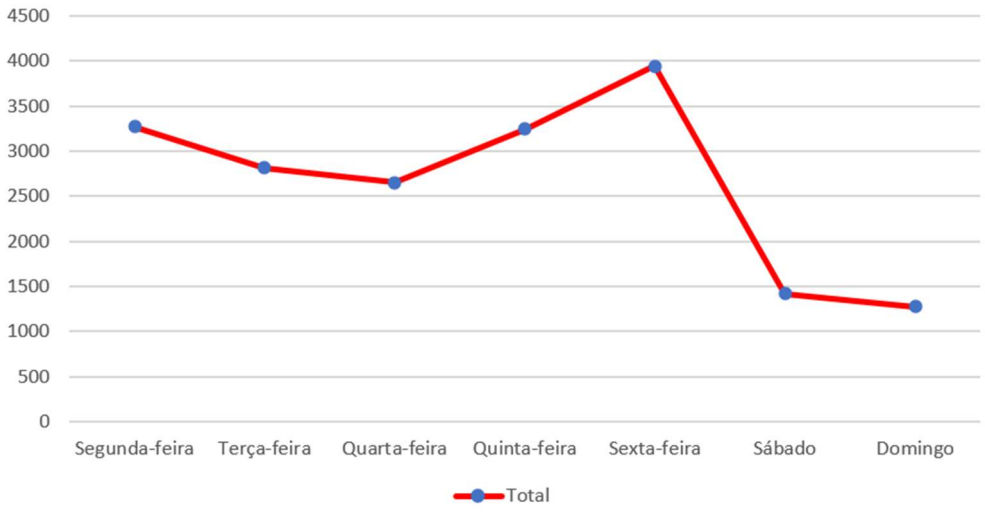
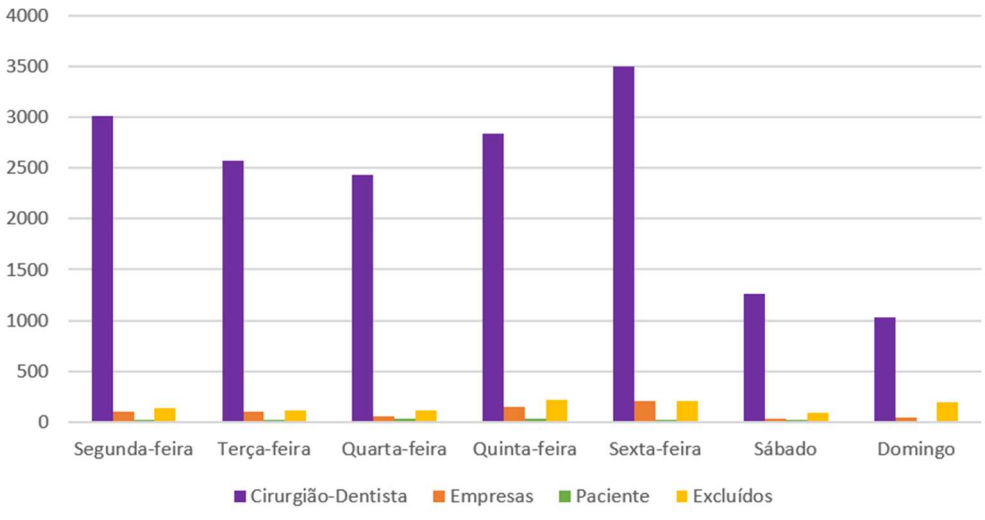


Figura 4. Volume de postagens de acordo com os dias da semana.



Dentre as *hashtags* utilizadas para a coleta dos dados, a *#invisalign* compreendeu o maior número de postagens (n=6.485), seguida por *#orthodontics* (n=5.683), *#braces* (n=4.183), e, por último, *#orthodontist* (n=2.254). A *hashtag* com maior presença de postagens de cirurgiões-dentistas foi *#invisalign* (n=6.021),

seguida por *#orthodontics* (n=5.058), *#braces* (n=3.687) e *#orthodontist* (n=1.890). A *hashtag* que compreendeu a maior quantidade de publicações de pacientes em tratamento ortodôntico foi *#braces* (n=77), seguido por *#invisalign* (n=50), *#orthodontics* (n=20) e *#orthodontist* (n=6).

A análise estatística mostrou não haver diferenças significativas entre os conteúdos das postagens realizadas no X e no Instagram e também não foram identificadas diferenças significativas entre a quantidade das postagens localizadas em cada tema identificado (p>0,05) (Tabela 2).

Tabela 2. Análise estatística com tabulação cruzada entre os temas identificados.

			Tipo de relato					
			Relato positivo sobre o tratamento	Queixas e limitações sobre tratamento	Entusiasmo em iniciar o tratamento	Ansiedade devido ao tratamento	Relato neutro sobre o tratamento	Total
Mídia social	Instagram	Contagem	55_a	20_a	29_a	27_a	3_a	134
		% em Mídia social	41,0%	14,9%	21,6%	20,1%	2,2%	100,0%
		% em Tipo de relato	88,7%	80,0%	93,5%	90,0%	60,0%	87,6%
	X	Contagem	7_a	5_a	2_a	3_a	2_a	19
		% em Mídia social	36,8%	26,3%	10,5%	15,8%	10,5%	100,0%
		% em Tipo de relato	11,3%	20,0%	6,5%	10,0%	40,0%	12,4%
Total		Contagem	62	25	31	30	5	153
		% em Mídia social	40,5%	16,3%	20,3%	19,6%	3,3%	100,0%
		% em Tipo de relato	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Cada letra de subscrito indica um subconjunto de Tipo de relato categorias cujas proporções da coluna não se diferem significativamente umas das outras no nível ,05.

Ademais, análise estatística mostrou não haver diferenças significativas entre as *hashtags* investigadas e os temas identificados nas postagens (p>0,05) (Tabela 3).

Tabela 3. Comparação entre hashtags e os temas identificados.

			Hashtag				
			Braces	*Invisalign*	*Orthodontics*	*Orthodontist*	Total
Tipo de relato	Relato positivo sobre o tratamento	Contagem	31_a	23_a	6_a	2_a	62
		% em Tipo de relato	50,0%	37,1%	9,7%	3,2%	100,0%
		% em Hashtag	40,3%	46,0%	30,0%	33,3%	40,5%
	Queixas e limitações sobre tratamento	Contagem	11_a	11_a	2_a	1_a	25
		% em Tipo de relato	44,0%	44,0%	8,0%	4,0%	100,0%
		% em Hashtag	14,3%	22,0%	10,0%	16,7%	16,3%
	Entusiasmo em iniciar o tratamento	Contagem	17_a	6_a	7_a	1_a	31
		% em Tipo de relato	54,8%	19,4%	22,6%	3,2%	100,0%
		% em Hashtag	22,1%	12,0%	35,0%	16,7%	20,3%
	Ansiedade devido ao tratamento	Contagem	15_a	8_a	5_a	2_a	30
		% em Tipo de relato	50,0%	26,7%	16,7%	6,7%	100,0%
		% em Hashtag	19,5%	16,0%	25,0%	33,3%	19,6%
	Relato neutro sobre o tratamento	Contagem	3_a	2_a	0_a	0_a	5
		% em Tipo de relato	60,0%	40,0%	0,0%	0,0%	100,0%
		% em Hashtag	3,9%	4,0%	0,0%	0,0%	3,3%
Total		Contagem	77	50	20	6	153
		% em Tipo de relato	50,3%	32,7%	13,1%	3,9%	100,0%
		% em Hashtag	100,0%	100,0%	100,0%	100,0%	100,0%

Cada letra de subscrito indica um subconjunto de Hashtag categorias cujas proporções da coluna não se diferem significativamente umas das outras no nível ,05.

Discussão

Este estudo objetivou investigar postagens nas redes sociais relacionadas à Ortodontia e identificar as perspectivas nas redes sociais acerca do tratamento ortodôntico. O tema mais encontrado no estudo foi “relato positivo sobre o tratamento ortodôntico” (40,53%), que compreende a felicidade com o progresso do tratamento, visualização dos resultados e finalização do tratamento. Este achado está em consonância com a literatura que relata que, apesar das críticas e queixas ao longo do tratamento, 84,90% dos pacientes adultos terminam o tratamento ortodôntico satisfeitos.[17]

Os relatos de ansiedade e relatos de queixas e limitações sobre o tratamento ortodôntico compreenderam 35,94% das publicações dos pacientes no estudo. Com frequência, os pacientes tendem a iniciar o tratamento com altas expectativas e exigências, principalmente no que concerne a técnica com alinhadores.[9] Deste modo, é papel do ortodontista orientar de forma clara e objetiva sobre riscos e benefícios do tratamento ortodôntico, de modo que a decisão terapêutica seja consciente por parte do paciente e com expectativas alinhadas à realidade.[18]

Não foram identificadas diferenças significativas entre os conteúdos publicados nas redes sociais X e Instagram. Este resultado pode ser explicado devido ao número desproporcional de postagens nas plataformas durante o mesmo período de tempo, no qual o Instagram compreendeu 96,60% das publicações. O achado vai contra evidência na literatura que identificou publicações com relatos mais positivos no Instagram, com diferenças significativas frente ao X.[12] Entretanto, este estudo anterior limitou sua metodologia com a busca de postagens somente no idioma alemão.

Para o presente estudo foi optado por utilizar as redes sociais X e Instagram, escolhidas por possuírem ferramenta de busca similar, por meio de *hashtags* e pelo potencial de gerarem um grande volume de dados relevantes à pesquisa.[6,10] Diferentemente de outras plataformas de mídias sociais, o Instagram e o X são redes sociais com publicações em tempo real. Deste modo, é possível observar perspectivas de pacientes com maior precisão e viés reduzido, a partir de relatos de experiências no momento em que são vivenciadas.[15] Nota-se também que o

paciente prefere partilhar de suas experiências nas redes sociais a comunica-las ao ortodontista.[8]

Dentre as 18.605 postagens investigadas, 89,52% foram realizadas por perfis de cirurgiões-dentistas ou de clínicas odontológicas e 93,38% das postagens possuíam algum fim comercial, seja de publicidade para cirurgiões-dentistas ou de propaganda para venda de produtos odontológicos. Estes números são maiores que a presença de pacientes leigos nas mesmas *hashtags* e plataformas investigadas. Tem-se constatado que as postagens com fins de publicidade odontológica possuem pouco ou nenhum controle em relação à qualidade do conteúdo publicado.[5]

Diante disso, muitos estudos têm focado na análise da qualidade da informação publicada na internet, e investigam tanto *sites* de busca como as redes sociais.[19,20] Interessantemente, foi demonstrado que ortodontistas não foram capazes de diferenciar postagens publicadas com ou sem embasamento científico nas redes sociais.[21] A qualidade das informações encontradas nas redes sociais foi considerada deficiente, e, por não haver um "policiamento" das informações publicadas *online*, o conteúdo encontrado pode não fornecer a melhor evidência científica disponível.[22] Diante do grande volume de postagens com fins comerciais e como há pouco controle da qualidade dessas informações, seus conteúdos devem ser interpretados com cautela.[23]

Um estudo em 2014 revelou que apenas 1,5% dos usuários de redes sociais buscavam por informações sobre o tratamento ortodôntico no X.[11] Contudo, recentemente foi demonstrado que X e Instagram são plataformas em que pacientes e cirurgiões-dentistas estão conectados e cada vez mais trocam informações sobre o tratamento ortodôntico.[21,24] Estes dados evidenciam como o perfil dos usuários das redes sociais mudou drasticamente ao longo da última década, e revelam também o aumento exponencial da presença dos profissionais da Odontologia nas redes sociais, principalmente com fins comerciais e de publicidade.

Estudos mostram que o Instagram, seguido pelo X, é uma rede social amplamente utilizada por pacientes, profissionais e estudantes de Odontologia na busca por serviços ou informações de saúde.[21,24] Ainda, um estudo comparou as diferentes percepções diante de postagens de Ortodontia no Instagram, e constatou que ortodontistas e estudantes de Odontologia valorizam mais imagens

que ilustram aspectos técnicos, ao contrário de leigos.[24] Estes resultados indicam que o tipo de conteúdo publicado *online* pode influenciar de formas distintas diferentes grupos de pessoas no que tange à credibilidade ou à escolha de um profissional.

Por fim, é preciso atentar-se aos riscos presentes nas mídias sociais. A desinformação, ou *fake news*, é um dos principais problemas, onde a própria dinamicidade das plataformas resulta em rápida propagação de conteúdos falso e sem qualidade.[25] Outro sério problema é em relação ao algoritmo das plataformas, pois ele ainda não é capaz de distinguir conteúdos inofensivos de nocivos, e pode estimular o desenvolvimento de comportamentos obsessivos e compulsivos, como no caso de distúrbios alimentares reportados na literatura.[26] É imprescindível, portanto, que o uso das redes sociais seja realizado com cautela e discernimento.

A principal limitação desse estudo foi a utilização de apenas *hashtags* em inglês na estratégia de busca, apesar de não ter sido realizada restrição de idioma. Deste modo, a maioria das publicações localizadas foram publicadas no idioma inglês e não foi possível realizar uma análise intercultural ou geográfica. Outra limitação do estudo foi a investigação de publicações realizadas em somente duas plataformas de mídias sociais, onde entende-se que a parcela de usuários investigados pode não representar a população como um todo. Ainda, diante do volume de publicações encontradas, não foi possível análise da perspectiva do ortodontista nas redes sociais. Sugere-se, portanto, novos estudos para analisar profundamente o conteúdo das postagens de ortodontistas, com a possibilidade de traçar um perfil destes profissionais nas redes sociais.

Conclusões

Com base na avaliação dos conteúdos publicados por meio de *hashtags* nas plataformas X e Instagram, conclui-se que:

- Houve predominância de postagens por cirurgiões-dentistas e ortodontistas em contraste com a escassa presença de publicações realizadas por pacientes.
- Entre os temas identificados nas postagens de pacientes em tratamento ortodôntico a categoria "relato positivo sobre o tratamento ortodôntico" foi a mais encontrada.
- Não foram identificadas discrepâncias significativas entre os conteúdos das postagens realizadas no X e no Instagram.

Referências

1. Kemp S. Digital 2023: July Global Statshot Report; 2023.
2. Blight MG, Ruppel EK, Schoenbauer KV. Sense of Community on Twitter and Instagram: Exploring the Roles of Motives and Parasocial Relationships. Cyberpsychol Behav Soc Netw 2017;20.
3. Simplício AHM. Social media and Dentistry: ethical and legal aspects. Dental Press J Orthod 2019;24:80-89.
4. Jorgensen G. Social media basics for orthodontists. Am J Orthod Dentofacial Orthop 2012;141:510-515.
5. Alkadhimia A, Al-Moghrabib D, Fleming PS. The nature and accuracy of Instagram posts concerning marketed orthodontic products: A cross-sectional analysis. Angle Orthod 2022;92:247-254.
6. Chan A, Antoun JS, Morgaine KC, Farella M. Accounts of bullying on Twitter in relation to dentofacial features and orthodontic treatment. J Oral Rehabil 2017;44:244–250.
7. Hassana MG, Kapilac S. Using Twitter to promote #orthodontic research and clinical innovations: Practice and challenges. Am J Orthod Dentofacial Orthop 2021;161:490-496.
8. Papadimitriou A, Kakali L, Pazera P, Doulis I, Kloukos D. Social media and orthodontic treatment from the patient's perspective: a systematic review. Eur J Orthod 2020;42:231–241.
9. Adobes-Martin M, Montoya-Morcillo ML, Zhou-Wu A, Garcovich D. Invisalign treatment from the patient perspective: A Twitter content analyses. J Clin Exp Dent 2021;13:e376-e282.
10. Buyuk KS, Imamoglu T. Instagram as a social media tool about orthognathic surgery. Health Promot Perspect 2019;9:319-322.
11. Henzell RM, Knight MA, Morgaine KC, Antoun JS, Farella M. A qualitative analysis of orthodontic-related posts on Twitter. Angle Orthod 2014;84:203-207.
12. Graf I, Gerwing H, Hoefer K, Ehlebracht D, Christ H, Braumann B. Social media and orthodontics: A mixedmethods analysis of orthodontic-related posts on Twitter and Instagram. Am J Orthod Dentofacial Orthop 2020;158:221-228.
13. Graf I, Kruse T, Braumann B, Hoefer K, Ehlebracht D. Looking good but tweeting bad? The social perception of orthodontic-related posts on Twitter and Instagram. Head Face Med 2022;18:1-11.
14. Korkmaz YN, Arslan S, Buyuk SK. Bullying in individuals with cleft lip and palate: A Twitter analysis. Int J Clin Pract 2021;75.
15. Heaivilin N, Gerbert B, Page JE, Gibbs JL. Public Health Surveillance of Dental Pain via Twitter. J Dent Res 2011;90:1047-1051.
16. Mayring P. Qualitative Inhaltsanalyse. In: Mey G, Mruck K, editors. Handbuch Qualitative Forschung in der Psychologie. Wiesbaden: VS Verlag für Sozialwissenschaften; 2010. p. 601-613.
17. Lee R, Hwang S, Lim H, Cha JY, Kim KH, Chung CJ. Treatment satisfaction and its influencing factors among adult orthodontic patients. Am J Orthod Dentofacial Orthop 2018;153:808-817.
18. Bergström K, Halling A, Wilde B. Orthodontic care from the patients' perspective: perceptions of 27-year-olds. Eur J Orthod 1998;20:319-329.
19. Meade MJ, Dreyer CW. What's in a hashtag: A content evaluation of Instagram posts related to orthodontic retention and retainers. J World Fed Orthod 2021;10:35-39.

20. Patel U, Cobourne MT. Orthodontic extractions and the Internet: quality of online information available to the public. Am J Orthod Dentofacial Orthop 2011;139:e103-109.
21. Gasparello GG, Mota-Júnior SL, Hartmann GC, Berlesi AH, Acciaris F, Berretta LM et al. Orthodontics social media, perceptions of science- and non-science-based posts among orthodontists, dentists, students and laypeople. PLoS One 2023;18:e0286927.
22. Hegarty E, Campbell C, Grammatopoulos E, DiBiase AT, Sherriff M, Cobourne MT. YouTube™ as an information resource for orthognathic surgery. J Orthod 2017;44:90-96.
23. Livas C, Delli K, Ren Y. Quality evaluation of the available Internet information regarding pain during orthodontic treatment. Angle Orthod 2013;83:500-506.
24. Meira TM, Prestes J, Gasparello GG, Antelo OM, Pithon MM, Tanaka OM. The effects of images posted to social media by orthodontists on public perception of professional credibility and willingness to become a client. Prog Orthod 2021;22:7.
25. Aïmeur E, Amri S, Brassard G. Fake news, disinformation and misinformation in social media: a review. Soc Netw Anal Min 2023;13:30.
26. Logrieco G, Marchili MR, Roversi M, Villani A. The Paradox of Tik Tok Anti-Pro-Anorexia Videos: How Social Media Can Promote Non-Suicidal Self-Injury and Anorexia. Int J Environ Res Public Health 2021;18.

ANEXOS

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Abstract

A structured abstract using the headings Introduction, Methods, Results, and Conclusions is required for Original Article, Systematic Review, Randomized Controlled Trial, and Techno Bytes. An unstructured abstract is acceptable for Case Report and Clinician's Corner.

Acknowledgments

Collate acknowledgments in a separate section at the end of the article before the references; do not include them on the title page, as a footnote to the title page, or otherwise. List here those individuals who provided help during the research (eg, providing help with language or writing assistance, or proofreading the article).

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List funding sources in this standard way to facilitate compliance to funder's requirements:

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