

Bilingual evaluation of YouTube™ videos on teething symptoms and remedies

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Cite this article as: Demir D, Çerçi Akçay H. Bilingual evaluation of YouTube™ videos on teething symptoms and remedies. *J Health Sci Med.* 2025;8(6):1082-1088.

Received: 17.09.2025

Accepted: 09.10.2025

Published: 25.10.2025

ABSTRACT

Aims: This study aimed to evaluate the reliability, scientific accuracy, and educational value of YouTube™ videos related to teething symptoms and remedies for parents. Given the widespread use of digital platforms for health information, the study focused on identifying content quality differences between professional and non-professional sources.

Methods: A systematic search was performed on the YouTube™ platform (www.youtube.com) on July 25, 2025, using a computer in Türkiye. Both English (“teething symptoms,” “teething treatment”) and Turkish (“diş çıkarma semptomları,” “diş çıkarma tedavileri”) keywords were used. The first 100 videos retrieved for each search were screened, and duplicates, promotional content, and non-relevant materials were excluded. Eligible videos were assessed using the Global Quality Scale (GQS), DISCERN instrument, JAMA benchmark criteria, and the Video Information and Quality Index (VIQI). Metadata including video length, views, likes, dislikes, and uploader category was also collected. Statistical analyses included descriptive statistics, Mann-Whitney U tests, and Spearman’s correlation coefficients ($p < 0.05$).

Results: A total of 100 YouTube™ videos were analyzed. Mean scores were low across all instruments; GQS 2.6, DISCERN 11.7, JAMA 1.8, and VIQI 12.5. Videos from academic institutions achieved higher quality scores than non-professional sources. Likes showed significant positive correlations with GQS ($p = 0.315$) and DISCERN ($\rho = 0.360$, $p < 0.01$), while view counts were not associated with quality. Strong intercorrelations were observed among all quality tools ($\rho > 0.45$, $p < 0.01$).

Conclusion: YouTube™ provides a readily accessible platform for information on teething symptoms and remedies; however, the majority of videos lack scientific rigor, comprehensive explanations, and evidence-based recommendations. Content produced by healthcare professionals and academic institutions demonstrated superior quality, underscoring the need for their active involvement in creating reliable digital health resources.

Keywords: Educational technology, health communication, health knowledge, internet, pain management, teething, Youtube™

INTRODUCTION

Teething is a common developmental milestone during infancy, typically occurring between the ages of 4 to 36 months.^{1,2} This process involves the eruption of primary teeth, a natural yet challenging phase for both infants and their caregivers. As primary teeth emerge, various local and systemic symptoms may be observed, such as general irritability, sleep disturbances, crying, nasal discharge, flushed cheeks, fever, diarrhea, loss of appetite, hypersalivation, ear rubbing, and gingival inflammation on the erupting teeth, in this period of time when primary teeth erupt.³⁻⁵ While these symptoms are often viewed as normal during teething, they can be distressing for parents, leading them to seek ways to alleviate the discomfort their child experiences. Research has shown, however, that there is no significant causal relationship between teething and the occurrence of systemic symptoms like fever, diarrhea, or infections.^{3,6,7} Despite this, the symptoms of teething, especially local ones like irritability

and discomfort, can still cause concern, which often drives parents to look for relief options.

To alleviate the discomfort associated with teething, several pharmacological and non-pharmacological interventions have been recommended. Pharmacological treatments, such as analgesics and antipyretics, may be effective in managing pain and fever, while non-pharmacological strategies are also considered important adjuncts. These include the use of teething rings, chilled fruits and vegetables, and massaging the gums with clean fingers, cold spoons, or wet gauze. Additionally, pacifiers, topical anesthetic agents, and even alternative holistic medicine are frequently used by parents seeking relief for their children during this challenging period.⁶ Despite the availability of various remedies, scientific evidence supporting the efficacy of many of these treatments remains limited, and parents are often left to navigate a complex landscape of conflicting advice.

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Parents typically seek guidance on teething symptoms from healthcare providers such as pediatric dentists, pediatricians, family physicians, and other medical professionals. However, in recent years, there has been a marked increase in the use of online resources for obtaining health information related to infant care. The teething period requires careful monitoring, as it presents challenges for both infants and their caregivers.⁸⁻¹⁰ This shift toward digital platforms for health advice has introduced a new dynamic, with YouTube™ emerging as a widely-used and influential resource. YouTube™, the world's second most frequently used search engine and one of the most widely utilized social media platforms, has become a go-to source for parents seeking information on teething and other aspects of child health.¹¹ The ease of access to vast amounts of content on YouTube™ makes it an attractive tool for parents, but the lack of expert oversight means that the quality and reliability of the information available can vary significantly. As such, it is crucial to critically evaluate the accuracy and credibility of the information being disseminated on such platforms.

This growing reliance on video-based platforms for health-related information underscores the importance of understanding the quality of the content available, particularly when it comes to critical topics like teething, which requires careful management. With parents increasingly turning to YouTube™ for advice, the question arises as to whether the platform serves as a reliable source of health information. In order to provide parents with the most accurate and useful content, it is essential to assess whether YouTube™ videos provide evidence-based guidance and adhere to medical and scientific standards.

This study aims to evaluate the quality, accuracy, and scientific credibility of YouTube™ videos as an informational resource for parents seeking guidance on teething.

METHODS

Ethical Statement

This study did not involve human participants or identifiable personal data. Only publicly available YouTube™ content was analyzed. Therefore, ethical approval was not required, in accordance with the principles of the Declaration of Helsinki.

Video Selection and Data Collection

A systematic search was conducted on the YouTube™ platform (www.youtube.com) on July 25, 2025, using a computer located in Türkiye. The purpose was to identify publicly accessible videos providing information on teething symptoms and potential treatments for children. To reflect the bilingual search behavior of parents, both English and Turkish videos were evaluated.

The search terms used were “teething symptoms” and “teething treatment” for English content, and “diş çıkarma semptomları” and “diş çıkarma tedavileri” for Turkish content. These keywords were selected based on both existing literature and common user search patterns to capture the terminology most likely employed by the general public.

Prior to the search, browser history and cookies were cleared to minimize personalization bias, and the default “Sort by

relevance” filter on YouTube™ was applied. Because users predominantly engage with only the first three pages of search results, the first 100 videos retrieved for each keyword were included. This approach is supported by Desai et al.,¹² who reported that approximately 95% of viewers restrict their searches to this range.

For each video, metadata-including duration, upload date, view count, likes, dislikes, number of comments, and uploader category-was systematically recorded. Videos were classified into four source groups: (1) individual healthcare professionals, (2) universities or academic institutions, (3) health information platforms, and (4) other individual users.

Eligibility Criteria

To ensure methodological consistency and reliability, strict inclusion and exclusion criteria were applied. Videos were included if they met the following conditions: (1) English or Turkish language content, (2) minimum resolution of 240 p, (3) duration less than 30 minutes, and (4) a primary focus on teething symptoms and/or treatments. Videos were required to contain explanatory content delivered through narration, subtitles, or visual demonstration to qualify as educational material.

Videos were excluded if they were promotional in nature, created for entertainment purposes, of insufficient visual quality, or unrelated to teething. Duplicate videos and YouTube “shorts” were also excluded because of their limited duration and restricted educational content.

The inclusion and exclusion process was conducted by two independent researchers. To assess inter-rater reliability, both Cohen's kappa (κ) statistic and Intraclass Correlation Coefficient (ICC) were applied depending on the type of scale. Specifically, Weighted Kappa was used for ordinal scales such as the Global Quality Scale (GQS) and DISCERN score, while ICC (two-way mixed effects, absolute agreement model) was employed for continuous variables including JAMA, VIQI, and the total score. The overall inter-rater agreement was substantial, with Cohen's kappa calculated as $\kappa=0.81$ for categorical ratings. Disagreements were resolved by consensus, with a third reviewer consulted if necessary.

Statistical Analysis

All data analyses were performed using Python (version 3.11). As the data did not conform to a normal distribution, non-parametric tests were employed. Specifically, Spearman's rank-order correlation was used to assess associations between viewer engagement metrics (e.g., views, likes, dislikes, interaction index) and quality assessment scores (e.g., GQS, DISCERN, JAMA, VIQI). Correlation coefficients (ρ) and associated p-values were reported, with statistical significance set at $p<0.05$.

Descriptive statistics, including means, standard deviations, medians, and interquartile ranges (IQR), were calculated to summarize the distribution of variables. To illustrate variation across uploader types, boxplot visualizations were generated for key metrics such as the number of likes and the Interaction Index.

Data processing and visualization were conducted using Python libraries, including pandas for data handling, scipy.stats for statistical computation, and matplotlib and seaborn for plotting.

RESULTS

Descriptive Statistics

A total of 100 YouTube™ videos were included in the final analysis, of which 56 were in Turkish and 44 were in English. These videos were systematically assessed for content quality using validated evaluation tools, including the GQS, DISCERN instrument, JAMA Benchmark Criteria, and the Video Information and Quality Index (VIQI). Additionally, viewer engagement metrics—such as total number of views, likes, dislikes, and Interaction Index—were recorded and analyzed to evaluate the popularity and audience response toward the content (Table 1).

Table 1. Descriptive statistics of Turkish and English YouTube™ videos on teething

Parameter	English (mean±SD)	English (median, IQR)	Turkish (mean±SD)	Turkish (median, IQR)
Total views	112.085±194.931	18.465 (157.988)	44.29±111.562	3.410 (18.390)
Likes	811±1.597	145 (963)	797±2.787	20 (94)
Dislikes	0.0±0.0	0 (0)	0.0±0.0	0 (0)
Engagement Index	1.04±1.35	0.66 (0.84)	1.47±4.00	0.40 (1.33)

SD: Standard deviation, IQR: Interquartile range. The table summarizes descriptive statistics of Turkish and English YouTube™ videos related to teething, including total number of views, likes, dislikes, and Engagement Index.

Quality Scores

The mean DISCERN score of the evaluated videos was 11.7 (SD=4.2), indicating a generally low-to-moderate level of reliability and scientific accuracy. Similarly, the mean GQS was 2.6 (SD=1.1), suggesting that the videos tended to offer limited comprehensiveness and educational value. The average JAMA score was 1.8 (SD=0.6), highlighting the frequent absence of essential authorship, attribution, disclosure, and currency criteria. VIQI scores were also modest, with a mean of 12.5 (SD=3.6), reflecting generally poor structural coherence and audiovisual quality (Table 2).

Table 2. Quality assessment scores for both Turkish and English YouTube™ videos on teething symptoms and remedies

Parameter	Mean±SD	Median (IQR)
Global Quality Scale	2.6±1.1	2 (1)
DISCERN score	11.7±4.2	11 (5)
JAMA score	1.8±0.6	2 (1)
Video Information and Quality Index	12.5±3.6	13 (6)

SD: Standard deviation; IQR: Interquartile range. The table presents descriptive statistics of Global Quality Scale, DISCERN, JAMA, and Video Information and Quality Index scores.

When categorized by uploader type, videos uploaded by academic institutions had the highest mean scores across all quality indicators, particularly for GQS and DISCERN, suggesting that institutional content is more likely to meet established educational and scientific standards. In contrast,

videos uploaded by individual users and health-related websites demonstrated wide variability in quality, with several scoring poorly on all evaluation scales.

Correlation Analysis

Spearman correlation coefficients were computed to explore the associations between viewer engagement metrics (e.g., views, likes, dislikes, interaction index) and standardized video quality scores (DISCERN, GQS, JAMA, VIQI). The correlation matrix revealed several statistically significant relationships across these variables.

The total number of views exhibited a very strong positive correlation with the number of likes ($p=0.883$, $p<0.01$), indicating a strong alignment between video visibility and user engagement in the form of likes. However, no significant correlations were observed between view count and any of the four quality evaluation instruments: DISCERN ($p=0.07$), GQS ($p=0.09$), JAMA ($p=0.16$), and VIQI ($p=0.13$), suggesting limited association between view-based popularity and standardized content quality scores.

The number of likes showed statistically significant positive correlations with all four quality measures. Specifically, the correlation with DISCERN was $p=0.360$ ($p<0.01$), with GQS $p=0.315$ ($p<0.01$), with JAMA $p=0.291$ ($p<0.01$), and with VIQI $p=0.206$ ($p<0.05$). These correlations suggest that videos receiving higher numbers of likes tended to score better in terms of reliability, global quality, structural rigor, and visual information quality.

Interestingly, the number of dislikes also showed statistically significant positive associations with quality indicators. Dislike counts were correlated with DISCERN ($p=0.283$, $p<0.01$), GQS ($p=0.208$, $p<0.05$), and JAMA ($p=0.276$, $p<0.01$). No significant correlation was observed between dislikes and VIQI ($p=0.187$, $p=0.07$), indicating a marginal association.

The Interaction Index, which aggregates likes, comments, and views, demonstrated statistically significant moderate correlations with DISCERN ($p=0.346$, $p<0.01$) and GQS ($p=0.312$, $p<0.01$), but did not exhibit statistically significant correlations with JAMA ($p=0.199$, $p=0.06$) or VIQI ($p=0.175$, $p=0.13$). Additionally, the interaction index did not significantly correlate with the total view count ($p=0.63$), suggesting that aggregate engagement may not be directly influenced by raw visibility metrics.

Among the internal quality assessment instruments, strong and statistically significant correlations were observed, indicating high inter-rater consistency and overlapping domains of evaluation. Specifically:

- GQS was significantly correlated with DISCERN ($p=0.649$, $p<0.01$), JAMA ($p=0.544$, $p<0.01$), and VIQI ($p=0.451$, $p<0.01$).
- DISCERN showed strong positive correlations with JAMA ($p=0.591$, $p<0.01$) and VIQI ($p=0.590$, $p<0.01$).
- JAMA was also positively correlated with VIQI ($p=0.457$, $p<0.01$).

Collectively, these results indicate that the standardized instruments used to evaluate structural and educational

quality were strongly interrelated, producing internally consistent scores across different dimensions of content evaluation (Table 3 and Figure 1, 2).

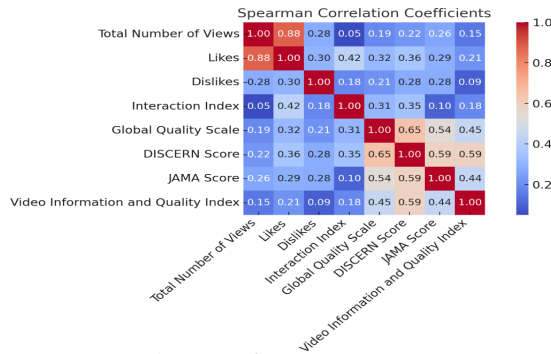


Figure 1. Spearman correlation coefficients among quantitative YouTube video metrics and quality evaluation scores (GQS, DISCERN, JAMA, VIQI). Positive correlations are indicated in red and negative correlations in blue. Stronger color intensity corresponds to higher correlation values

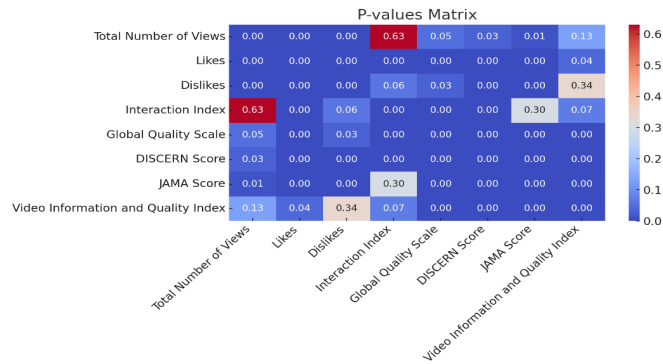


Figure 2. p-values matrix corresponding to the Spearman correlation between YouTube video metrics and quality assessment scores. Statistically significant relationships (p<0.05) are represented in dark blue, while non-significant correlations are shown in lighter shades

Boxplot Analysis by Uploader Type

Boxplot visualizations were generated to compare the distribution of like counts and Interaction Index values across different video uploader types, including academic institutions, dentists, individual users, and health-related websites.

The distribution of like counts showed that videos uploaded by academic institutions had a higher median number of likes compared to those from other uploader types. The interquartile

range for academic sources was narrower, indicating more consistent approval metrics, whereas individual users and dentists displayed broader variability and outliers in like counts.

For the Interaction Index, which aggregates likes, comments, and views, the boxplot indicated greater variability among individual users and dentists. Some videos from these groups exhibited higher interaction scores, as reflected by wider interquartile ranges and the presence of extreme values. In contrast, videos from academic sources showed lower dispersion and fewer outliers in Interaction Index values.

These distributional differences between uploader categories were visualized to facilitate further interpretation of engagement dynamics across source types (Figure 3).

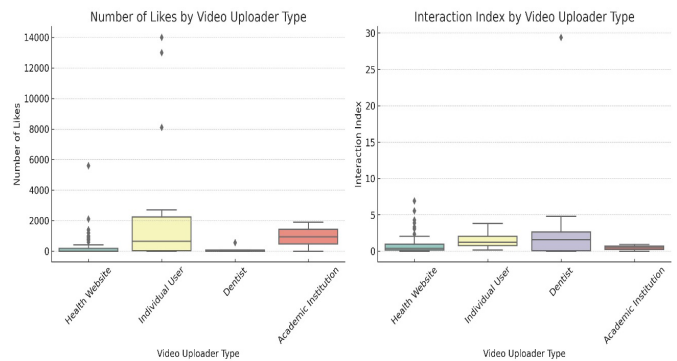


Figure 3. Boxplots comparing the number of likes and interaction index across different video uploader types

Inter-observer Reliability

Interobserver agreement was evaluated to ensure rating consistency. As presented in Table 4, Weighted Kappa values showed moderate agreement for the Global Quality Scale (GQS, $\kappa=0.599$, 95% CI: 0.431-0.768, $p<0.001$) and substantial agreement for DISCERN ($\kappa=0.783$, 95% CI: 0.678-0.888, $p<0.001$). The intraclass correlation coefficients demonstrated excellent inter-rater reliability for the JAMA benchmark criteria (ICC=0.921, 95% CI: 0.864-0.955, $p<0.001$) and for the Video Information and Quality Index (VIQI, ICC=0.915, 95% CI: 0.853-0.951, $p<0.001$). The composite total score, defined as the sum of DISCERN, JAMA, and VIQI scores, achieved the highest level of agreement with an ICC of 0.965 (95% CI: 0.938-0.980, $p<0.001$), reflecting strong alignment between evaluators across all scales.¹³

Table 3. Spearman correlation matrix with significance levels between YouTube engagement metrics and quality assessment tools (Global Quality Scale, DISCERN, JAMA, Video Information and Quality Index). Correlation is significant at the 0.01 level (2-tailed) is indicated by * and at the 0.05 level (2-tailed) by *

	Total number of views	Likes	Dislikes	Engagement Index	Global Quality Scale	DISCERN score	JAMA score	Video Information and Quality Index
Total number of views	1.000**	0.883**	0.278**	0.047	0.193*	0.216*	0.257**	0.150
Likes	0.883**	1.000**	0.305**	0.420**	0.315**	0.360**	0.291**	0.206*
Dislikes	0.278**	0.305**	1.000**	0.182	0.208*	0.283**	0.276**	0.094
Engagement Index	0.047	0.420**	0.182	1.000**	0.312**	0.346**	0.102	0.179
Global Quality Scale	0.193*	0.315**	0.208*	0.312**	1.000**	0.649**	0.544**	0.451**
DISCERN score	0.216*	0.360**	0.283**	0.346**	0.649**	1.000**	0.585**	0.590**
JAMA score	0.257**	0.291**	0.276**	0.102	0.544**	0.585**	1.000**	0.444**
Video Information and Quality Index	0.150	0.206*	0.094	0.179	0.451**	0.590**	0.444**	1.000**

Table 4. Interobserver agreement levels for Video Evaluation Scales using weighted Kappa and ICC

Scale	ICC/weighted Kappa	95% CI	p-value
Global Quality Scale (weighted Kappa)	0.668	0.431-0.768	<0.001
DISCERN (weighted Kappa)	0.908	0.678-0.888	<0.001
JAMA (ICC)	0.921	0.864-0.955	<0.001
Video Information and Quality Index (ICC)	0.849	0.853-0.951	<0.001
Total score (ICC)	0.965	0.938-0.980	<0.001

Note: Weighted Kappa was used for the Global Quality Scale and DISCERN score, while ICC (two-way mixed effects, absolute agreement) was applied for the JAMA, VIQI, and total score. ICC: Intraclass correlation coefficient, CI: Confidence interval

DISCUSSION

The widespread use of digital platforms has significantly influenced how parents access health-related information about their infants. In parallel with the ongoing technological advancements and the digitalization of healthcare services, platforms such as YouTube™ have become increasingly popular sources of medical content.¹⁴ This shift has created new opportunities for disseminating health information but also raised concerns regarding the accuracy, quality, and reliability of user-generated content.¹⁵

Previous studies in pediatric dentistry have evaluated YouTube™ videos on topics such as oral hygiene, early childhood caries, and fluoride use.^{3,16} In addition, some research has analyzed teething-related content, but these investigations were limited to English-language videos only.^{5,17}

Unlike those studies, the present study incorporated both Turkish and English videos, thereby offering a broader bilingual perspective. While this approach is novel in including content from two different languages, it should be emphasized that no direct comparative analysis between English- and Turkish-language videos was performed. Instead, only basic descriptive statistics such as the number of videos, mean views, likes, dislikes, and video duration were presented separately for each language group. To our knowledge, this is the first study in pediatric dentistry to extend video evaluations to both Turkish and English content, thereby broadening the scope of previous single-language analyses.

When categorized by uploader type, videos produced by academic institutions consistently achieved the highest mean scores across multiple quality assessment metrics, particularly in the GQS and the DISCERN instrument. This finding highlights the superiority of academic sources in adhering to scientific methodology and pedagogical standards, as they are generally developed with a more rigorous and evidence-based approach. In contrast, videos uploaded by individual users and health-focused websites demonstrated substantial heterogeneity in informational integrity and accuracy, with a significant portion performing poorly across evaluation criteria. Similar trends have been observed in previous studies evaluating YouTube™ videos on fluoride therapy, early childhood caries, teeth whitening, and pediatric surgery, all of which emphasized that professionally

generated content is more reliable and educational than layperson-generated videos.¹⁸⁻²¹ This variability reinforces the risk of misinformation in digital health communication and underscores the need for regulatory frameworks and systematic quality control protocols to safeguard information quality online.

The present study further revealed considerable methodological and educational limitations in YouTube™ videos addressing teething symptoms and remedies. Low mean scores across DISCERN (11.7), GQS (2.6), JAMA (1.8), and VIQI (12.5) collectively indicate that most analyzed videos failed to meet recognized standards of evidence-based health communication. Deficiencies were particularly evident in authorship transparency, source attribution, structural coherence, and audiovisual quality. Comparable shortcomings have also been reported in previous analyses of pediatric dentistry-related content, including oral hygiene and oral habits, where lack of referencing and poor audiovisual standards compromised reliability.^{22,23}

Another noteworthy finding was the absence of statistically significant correlations between total view count and content quality, suggesting that video visibility is algorithm-driven rather than associated with scientific reliability. Conversely, likes were moderately and positively correlated with all four quality indices, indicating that audience approval may partially reflect perceived educational value. Surprisingly, dislikes also showed positive correlations with DISCERN, GQS, and JAMA scores, although not with VIQI, suggesting that negative user feedback is not always directed at low-quality information but may instead reflect subjective disagreements or stylistic preferences.

Overall, these findings underscore a critical gap between user engagement signals and actual content quality. While view counts strongly correlate with popularity, they do not reliably indicate scientific rigor. By contrast, likes and dislikes demonstrated moderate associations with standardized quality indicators, reflecting a more nuanced relationship between user feedback and credibility.

From a public health perspective, these findings are concerning. Teething, although physiologically benign, often provokes significant parental anxiety. When parents rely on low-quality digital resources, they risk exposure to misinformation, adoption of inappropriate home remedies, or unnecessary anxiety-driven medical consultations.^{5,17} Moreover, the absence of alignment between video popularity and scientific accuracy highlights the algorithmic vulnerability of digital platforms, where engagement cues rather than reliability drive visibility.²⁴

Given these risks, academic institutions and professional organizations must take a more proactive role in digital content creation. Developing evidence-based, accessible, and linguistically diverse resources is essential. Practical strategies may include implementing quality verification badges, leveraging algorithms to prioritize peer-reviewed content, and establishing collaborations with platform providers to enhance visibility of institutionally verified materials.²⁵

Further analysis of user engagement revealed that the Interaction Index—a composite of likes, comments, and views—showed significant moderate correlations with DISCERN and GQS, but no significant associations with JAMA or VIQI. Importantly, no relationship was found between interaction index and total view count, underscoring that active engagement is not directly linked to raw viewership. Strong and significant correlations were observed among all four quality assessment tools, indicating that these instruments consistently capture overlapping methodological and educational quality dimensions.

Future research should extend beyond YouTube™ to encompass platforms such as TikTok, Instagram, and Facebook, where health-related content is increasingly consumed.^{26,27} Longitudinal studies are also needed to evaluate changes in video quality and user engagement over time, particularly in response to evolving platform algorithms and public health interventions.²⁸ Additionally, intervention-based research is warranted to test the effectiveness of strategies such as content verification systems, digital literacy campaigns, or educational labeling in improving the reliability and educational value of health-related digital content.²⁹

Limitations

This study has several limitations. First, it was restricted to YouTube™, excluding other popular platforms such as TikTok and Instagram. Second, the cross-sectional design provides only a snapshot in time; video quality and availability may change. Third, while both Turkish- and English-language videos were included, no direct statistical comparison was performed; only descriptive information was presented. Finally, the analysis was limited to publicly available videos, which may affect generalizability.

Future research should therefore adopt longitudinal and multi-platform approaches, with more detailed cross-linguistic analyses to strengthen the robustness of findings.

CONCLUSION

YouTube™ videos on teething frequently lack accuracy and educational value, creating risks of parental misinformation. Pediatric dental professionals should actively contribute evidence-based content. Equally important, digital platforms must adopt policy-level quality control strategies—such as verification systems and algorithmic prioritization of reliable sources—to ensure that trustworthy health information reaches parents. These combined efforts are essential to strengthen parental health literacy and support safe, evidence-informed childcare practices.

ETHICAL DECLARATIONS

Ethics Committee Approval

Publicly available YouTube™ content was analyzed and no ethical approval was required.

Informed Consent

Because the study has no study with human and human participants, no written informed consent form was obtained.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

Acknowledgment

This study was supported by the Scientific and Technological Research Council of Türkiye (TÜBİTAK) under the 2209-A Research Project Program, project number 1919B012405673.

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