

RESEARCH

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of experience in pediatric oral diagnosis and treatment. We assessed the accuracy of the content based on the Children’s Caries Risk Assessment and Management Guidelines [23].

Firstly, we evaluated the effectiveness of the video content and categorized all short videos into useful and useless information. Useless referred to personal experiences and medical education without scientific evidence for ECC. Useful was defined as a scientifically based description of the development process of ECC in short videos. Then we extracted relevant information from the included short videos, including video source, video duration, the number of days online, the number of comments, the number of likes and the number of collections.

Secondly, we applied a short instrument to evaluate the quality of each short video. This instrument was called DISCERN, which helped information providers and patients to assess the quality of written information regarding treatment choices [19]. The instrument consisted of 3 sections and a total of 16 questions, with each question scoring 1–5 points. Section 1: Is this publication reliable? (question 1–8); Sect. 2: How good is the quality of information about treatment choices? (question 9–15); Sect. 3: Overall rating of the publication. Then, we counted the overall score for each video and calculated the mean and standard deviation (SD) of the DISCERN scores for each group.

So far, there are no comprehensive models available to analyze the content quality of short videos on dental caries. We had customized a checklist to evaluate the

content quality of ECC short videos, displayed in Table 1. We divided the development process of ECC into six categories, including epidemiology, etiology, symptoms, diagnosis, treatment, and outcome. Then we scored each part of the short video based on its completeness as mentioned in the content. The description of short video content was divided into no content, little content, partial content and comprehensive content, with scores ranging from 0 to 3 points. Finally, the scores of the video content were counted, and the average scores of each section of each group were used for analysis.

**Statistical analysis**

In this study, SPSS Version 27 software was applied to data analysis. Percentage and frequency of data summary were used for categorical variable analysis and means or medians (SDs or ranges) were used for continuous and ordinal variables. To compare differences between groups, we conducted the one-way ANOVA on each group with DISCERN score. Statistically significant was defined as a *P*-value < 0.05.

**Results**

**Video selection**

More than 100 short videos were found by searching for Chinese and Japanese keywords on Douyin and TikTok mobile apps, respectively. However, when searching for English keywords on TikTok, only 89 short videos were displayed. Therefore, a total of 289 short videos were

**Table 1** Short video content scorecard

Content	Description	Score
Epidemiology	Incidence	No content: 0 points
	Age of onset	Little content: 1 point
Etiology	Tissue structure of deciduous teeth	Partial content: 2 points
	Dietary habits	Comprehensive content: 3 points
	Oral hygiene	
Symptoms	Caries decay	
	Pulpitis	
	Periapical periodontitis	
	Premature loss of deciduous teeth	
Diagnosis	Clinical examination	
	Imaging examination	
Treatment	Caries risk assessment	
	Preventive treatment	
	Filling therapy	
	Root canal therapy	
Outcomes	Surgical treatment	
	No new caries	
	Secondary caries	

selected, and 128 short videos were excluded after watching due to unrelated subject or other languages. Finally, 161 short videos were assessed for information quality in this study (Fig. 1).

**Characteristics**

The consistency test produced the Cohen's kappa value of 0.943, indicating that raters exhibited strong consistency in their evaluations (Supplementary S1). Among the selected short videos, most of them were sourced from health professionals or organizations, with Chinese 78 (85.7%), English 22 (55%), and Japanese 16 (53.3%), respectively. Private users uploaded a portion of short videos, with 9 (9.9%) in Chinese, 16 (40%) in English, and 14 (46.7%) in Japanese. News media spread even less, with only 4 (4.4%) in Chinese, 2 (5%) in English, and none in Japanese. The mean duration of the video was 72 s (10–279 s) in Chinese, 29 s (4–133 s) in English and 39 s (6–112 s) in Japanese. The average number of online days for short videos were 459 days (1–1431 days) in Chinese,

383 days (15–1015 days) in English, and 340 days (8–1245 days) in Japanese. The median number of likes, comments and collections in Chinese short videos were 4454 (4–261k), 364 (0–14k), 793 (0–32k), respectively. The median of likes, comments, and collections in English short videos were 10.4 k (1–322.2k), 141(0–2863), and 304 (0–5529), respectively. For Japanese, the median of likes, comments and collections were 17.8k (30–52.6k), 52 (0–1237), and 82 (0–1771), respectively. Finally, 161 short videos were divided into useful and useless based on educational content, with useful information accounting for 85.7% in Chinese, 65% in English, and 36.7% in Japanese. The data results were shown in Table 2.

**Content quality score**

The radar map of the score for short videos content quality showed in Fig. 2. The mean score for epidemiology, which was the lowest, was 0.077 for English, 0.091 for Japanese and 0.154 for Chinese. For epidemiology, the mean score was 0.385 for English, 0.545



**Fig. 1** Flowchart of short videos selection



between-group differences were identified via one-way ANOVA (F-statistic = 19.615,  $p < 0.05$ ). Effect size analysis revealed partial eta squared = 0.259 and Cohen's  $f = 0.592$ , demonstrating that the observed differences account for moderate proportions of variance in the outcome variable (Supplementary S2). Subsequently, the differences between the two groups were compared through post hoc testing (Scheffé's test) (Supplementary S3). As shown in Fig. 3, compared with English and Japanese videos, Chinese videos had the highest DISCERN score with significant differences ( $p < 0.05$ ). Between English and Japanese videos, there was no significant difference ( $p = 0.896$ ). The short videos published by news networks had the highest DISCERN scores in both Chinese and English, but the sample size was small and there was no Japanese sample data available. Short videos uploaded by healthcare professionals or organizations had a higher DISCERN score in Chinese, which were more compre-

epidemiology and outcomes in short videos. Among the three groups, the symptoms and treatment segments

publish medical contents, which need to be reviewed by a professional team [44]. The professional team needed to refer to authoritative textbooks, the latest clinical guidelines, and medical evidence-based literature to comprehensively demonstrate the scientific and logical nature of the video content. At the same time, it was necessary to judge from the perspective of ordinary users whether the video content was misunderstood by other users due to only matching some users, and judge whether the content could pass as a whole. Therefore, Chinese short vid-



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## Authors' contributions

HMN: conceptualization, supervision, methodology, writing-review and editing. LH: conceptualization, supervision, writing-review and editing. HMY: investigation, formal analysis. LCY: writing-review and editing, data administration. ZYM: formal analysis. WD: formal analysis. TSJ: conceptualization, supervision, methodology, writing-review and editing. HMN and LH are co-first authors.

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## Data availability

All data generated or analyzed during this study are included in this published article and its supplementary information files.

## Declarations

### Ethics approval and consent to participate

No ethical approval was required as our research involved the analysis of publicly available aggregated data with no direct involvement of human subjects. Therefore, no ethical approval process was necessary for conducting this research.

### Consent for publication

Not applicable.

### Competing interests

The authors declare no competing interests.

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