

ORIGINAL RESEARCH

Assessing the efficacy of short reel content on social media for enhancing oral hygiene practices among 12-year-old school-going children

Saeed Awod Bin Hassan¹, Ahmed Babiker Mohamed Ali¹, Shafait Ullah Khateeb¹, Shan Sainudeen¹, Sahana Shivakumar^{2,*}, Marco Di Blasio^{3,*}, Marco Cicciù⁴, Giuseppe Minervini^{5,6}

¹Department of Restorative Dental Sciences, College of Dentistry, King Khalid University, 62529 Abha, Kingdom of Saudi Arabia

²Public Health Dentistry, Peoples College of Dental Sciences and Research Centre, Peoples University, 462037 Bhopal, India

³Department of Biomedical, Surgical and Dental Sciences, University of Milan, 20122 Milan, Italy

⁴Department of Biomedical and Surgical and Biomedical Sciences, Catania University, 95123 Catania, Italy

⁵Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, 600077 Chennai, India

⁶Multidisciplinary Department of Medical-Surgical and Odontostomatological Specialties, University of Campania "Luigi Vanvitelli", 80138 Naples, Italy

*Correspondence

sahana20579@gmail.com

(Sahana Shivakumar);

marco.diblasio@unimi.it

(Marco Di Blasio)

Abstract

Background: In recent years, social media platforms have become increasingly popular as powerful communication tools for exchanging information and ideas. Oral health plays a crucial role in overall well-being. This study aimed to evaluate the effectiveness of short-reel content on social media in enhancing oral hygiene practices among 12-year-old school-going children. **Methods:** A quasi-experimental study was conducted among 380 12-year-old schoolchildren selected from five schools using stratified convenience sampling. Five schools were assigned to the intervention group, which received educational short reels on social media platforms such as Instagram, Facebook, or WhatsApp, while the other two served as the control group, receiving only a chairside educational talk. Information concerning knowledge, attitude, and oral hygiene practices was obtained using a questionnaire, while oral examinations were performed using the Oral Hygiene Index-Simplified (OHI-S). **Results:** A significant difference in knowledge, attitude, and practices in the intervention group (compared to the control group) was evident after the intervention. The mean value of the oral hygiene index simplified was 2.57 ± 1.61 at baseline. After the intervention, it was 1.17 ± 0.55 in the experimental group and 2.35 ± 3.71 in the control group, with a statistically significant p -value (0.001). Before the intervention, there was no statistically significant difference between the two groups. The intervention led to significant improvement in the intervention group, indicating that social media has helped enhance both oral health and oral hygiene practices. **Conclusions:** The observations from the study indicate that social media short-film content contributed to knowledge, attitudes, and oral hygiene practices in 12-year-old schoolchildren. Novel, fast-paced formats, such as those found on the short reels, could have a great effect on memory and behaviour change. **Clinical Trial Registration:** Registered with the Clinical Trials Registry (CTRI) under the number CTRI/2025/10/095625 (Delayed registration).

Keywords

Oral hygiene; Knowledge; Attitude; Practices; Social media; Short reels

1. Introduction

Oral health plays a pivotal role in overall well-being, as oral diseases not only impact eating efficiency but also have profound implications on an individual's personality, social satisfaction, and confidence [1]. The global impact of oral diseases is extremely high, affecting approximately 3.5 billion people worldwide and imposing enormous health and economic burdens [2]. Permanent tooth caries is one of the most common health conditions globally and profoundly affects quality of life, according to the Global Burden of Disease 2017 data [3]. In India, the overall prevalence of dental caries is 54.16%, according to a study, and has been reported at 52% among

specific age groups, especially 3 to 18 years old [4]. Despite being preventable, dental diseases still lead to significant public health challenges, which are largely attributed to factors such as diet and lifestyle modifications. Thus, there is a critical need for holistic guidance, especially at early developmental stages, to facilitate the implementation of effective lifestyles and practices to prevent oral diseases [5].

During adolescence, typically between the ages of 12 and 14 years, cognitive functions are fully developed. This makes it a critical period for behavior modification to instill lifelong self-care habits [6]. At 12 years, children are typically finishing their primary education, making it a very good time to collect the data. Moreover, as all permanent teeth except for the

third molars have erupted by this age, it is an optimal period for universal comparison of dental disease types [7]. Indian schoolchildren often experience comorbidity with dental diseases, resulting in high treatment costs. Thus, prevention is considered the most promising method used to combat oral health problems [8]. However, India struggles to achieve this due to disparities in the healthcare system, which is even more limited in rural areas, where a majority of the population resides, with over 40% being children under 15 years old [9, 10].

Social media, a culmination of internet-based applications stemming from Web 2.0, empowers individuals to generate and distribute their own content [11, 12]. Recent years have seen an explosion in the popularity of virtual media as an effective communication tool for exchanging information and ideas [13–17]. Digital media usage in India has surged with an estimated 600 million active internet users. Starting from simple email messaging, internet usage today covers an array of online platforms such as WhatsApp, YouTube, Instagram, Facebook, Messenger, and Twitter, which have smoothly integrated into the daily lives of many Indians [18]. This pattern extends to dentistry, where young dentists increasingly use social networking applications to promote oral health [19]. Acknowledging the opportunities of digital media in terms of their ability to reach large audiences, especially in remote regions where oral health services are less accessible, is imperative, given the close association between poor oral health and systemic health issues. Consequently, advocating and adopting healthy practices, especially from a young age, is paramount. Hence, the present study aims to assess the efficacy of short reel content on social media in enhancing oral hygiene practices among 12-year-old school-going children.

2. Materials and methods

A quasi-experimental study design was adopted to assess the efficacy of short reel content on social media for enhancing oral hygiene practices among 12-year-old school-going children. Ethical approval was obtained from the Institutional Ethical Committee of the People's College of Dental Sciences and Research Centre (EC202179). The study was conducted over four months, between May 2023 and August 2023. The study protocol was developed, and all subjects/parents/caregivers provided written informed consent before participation. Participants were randomly assigned to either the intervention group (exposed to short-reel content on oral hygiene) or the control group (not exposed to short-reel content). The intervention group received access to short-film content on social media platforms focused on oral hygiene practices. The content included educational videos, animations, and interactive quizzes aimed at promoting oral health habits. Table 1 presents a detailed description of the educational intervention. The control group did not receive any intervention and continued their usual oral hygiene routines.

Intervention group inclusion criteria were: (i) students aged 12 years; (ii) students willing to participate; and (iii) students who were able to effectively communicate. Exclusion eligibility criteria included students with systemic diseases, students on medication, and students unwilling to participate.

It also excluded children with significant cognitive or physical impairments that could prevent effective engagement.

With 80% power and 5% level of significance, we determined the desired sample size ($n = 136$) for each group, for a total of 272 participants. To account for an expected 20% sample loss on follow-ups, the sample size was increased to 324 participants. A final sample size of 380 was calculated to ensure that the full stratum of 12-year-olds in the selected schools, including 190 individuals from each group, resulted in a more complete representation of participants from the target age group. Therefore, the final sample size (380 participants, evenly split between the intervention and control groups) was considered essential to properly evaluate the effect of the intervention on improving oral hygiene practices of school-going children aged 12 years. A stratified random sampling technique was employed to recruit the study sample. The study selected one school from each administrative zone (North, East, West, South, and Central) of Bhopal city.

2.1 Group allocation and data collection

Students were randomly allocated to the intervention and control groups. Before group allocation, baseline data on knowledge, attitude, and oral hygiene practices among students were collected through a validated, closed-ended questionnaire [20]. This study validated the questionnaire and assessed its content validity using the Content Validity Index (CVI) score. The study quotes the questionnaire in the Annexures as **Supplementary material**. This process guarantees that the questionnaire accurately assesses the intended constructs and is considered valid for the study's goals. An oral health examination was performed using the Oral Hygiene Index-Simplified (OHI-S) [21]. The intervention group received ten educational and motivational short reels related to knowledge, attitude towards oral health, and oral hygiene practices on social media platforms, either on Instagram, Facebook, or WhatsApp, within one month, while the non-intervention group received only a session of chairside educational talk at school. After 1 month, information regarding knowledge, attitude, and oral hygiene practices was collected using the same questionnaire, followed by oral examination using the Oral Hygiene Index-Simplified (OHI-S).

2.2 Statistical analysis

The data were transferred to Excel spreadsheets and analyzed using Statistical Package for Social Sciences software (SPSS) version 25.0 (SPSS, Inc., Chicago, IL, USA). descriptive statistics included numbers, percentages, means, and standard deviations. Differences in knowledge, attitude, and practices were assessed using the Chi-square test. A repeated measures analysis of variance (ANOVA) was applied to compare the OHI-S data collected from children at multiple time points. Statistical significance was set at $p < 0.05$ for all analyses.

3. Results

Among the 380 students included in the study, there were 189 males and 191 females. The assessment of students' knowledge and attitudes toward oral health revealed that 58.1%

TABLE 1. Oral health education intervention chart.

Content	Description	Time duration	Media employed
Educational videos	Showing oral hygiene practices like brushing, flossing, and rinsing	2 min	WhatsApp, Instagram
Animations	Animations showing the effect of poor oral hygiene and the advantages of maintaining good oral hygiene	1 min	WhatsApp, Instagram
Interactive quiz	Quiz questions to reinforce the learning from videos and animations	2 min	WhatsApp
Tutorial on dental products	Explaining the availability of oral care products and their correct usage	2 min	WhatsApp videocall
Technique demonstration	Real-time demonstration of brushing and flossing techniques by a professional	5–7 min	WhatsApp videocall, Facebook live
Feedback sessions	Sessions for students to share their feedback on their oral hygiene practices	5–7 min	WhatsApp, Facebook

recognized how to detect tooth decay or cavities; 83.1% were aware that yellow or brown discoloration near the tooth and gum indicated unhealthy teeth; 59.2% understood that fluoride helps prevent tooth decay; and 74.2% knew that mouthwashes can prevent or reduce gum problems (Table 2).

In terms of attitudes, 86.5% and 73.1% of students acknowledged the importance of oral health and caring for teeth and gums, respectively. However, only 4.2% believed that dental treatment was affordable, while 68.1% experienced anxiety about visiting a dentist, and only 4.7% recognized the necessity of biannual dental visits (Table 2).

Assessment of students' oral hygiene practices (Table 3) revealed that only 20.5% brushed their teeth twice daily, 15.7% utilized additional cleaning measures such as dental floss and tongue cleaners, 25.7% used medium-hard brushes, and 12.6% replaced their brushes every three months. Additionally, 19.7% and 18.1% of students reported occasional consumption of sweets and carbonated drinks, respectively, while only 13.6% rinsed their mouths with water after eating, and 21.3% visited a dentist regularly.

As shown in Table 4, following the intervention, the intervention group significantly improved their knowledge, attitudes, and oral hygiene practices compared to the non-intervention group.

The oral hygiene index simplified mean value decreased to 1.171 ± 0.552 in the intervention group and 2.35 ± 3.71 in the control group post-intervention, with a statistically significant difference noted (Table 5). The mean value of the simplified oral hygiene index before and after intervention in the experimental group was 2.570 ± 1.618 and 1.171 ± 0.552 , while in the control group it was 2.590 ± 0.824 and 2.356 ± 3.717 , respectively (Table 5). The intervention significantly improved the oral hygiene index in the experimental group, but not in the control group. The experimental group showed a strong intervention effect with a higher effect size, indicating the effectiveness of the educational intervention in improving oral hygiene practices.

The study findings suggest that there is a notable gap in oral health knowledge, attitudes, and practices among school-going children. Prior to the intervention, a significant pro-

portion of students demonstrated a limited understanding of oral health concepts and exhibited suboptimal oral hygiene practices. However, following the intervention, there was a marked improvement in knowledge, attitudes, and practices related to oral health among the intervention group compared to the control group. Specifically, there was increased awareness regarding tooth decay, the importance of oral health, and the need for regular dental visits. Moreover, the intervention group showed a significant enhancement in oral hygiene practices, as evidenced by a lower mean value of the simplified oral hygiene index compared to the control group.

4. Discussion

With the widespread availability of computers and mobile phones in households, children now have easier access to the internet, which has increased influence of social media platforms, especially among younger populations. This trend has grown significantly over recent decades, allowing individuals to access a wealth of health-related information published by both public and private sources [22]. Recognizing this as a valuable opportunity, the present study aimed to evaluate the effectiveness of short-reel content on social media in enhancing oral hygiene practices among 12-year-old school-going children. The study found that students' knowledge, attitudes, and oral health practices were suboptimal, indicating significant room for improvement in their approach to oral health. However, after the intervention using short-reel content, there was a marked improvement in awareness, attitudes, and oral hygiene practices compared to the control group, which received only chair-side educational talks.

This study suggests that social media has a significant visual impact on memory and behaviour change among students, particularly when compared to traditional educational methods. Previous studies have also shown that oral health interventions on virtual platforms improve participants' knowledge, attitudes, and practices. Such interventions generally show satisfactory acceptability and retention rates and have significant potential, and social media may therefore be an effective medium for promoting oral health education in schoolchildren [23].

TABLE 2. Knowledge and attitude regarding oral health among students before intervention.

Questions	Choices	Correct answer n (%)
Knowledge		
1. What are the signs or symptoms that indicate the presence of tooth decay or cavity?	Correct	221 (58.1%)
2. What does swollen and discoloration on gums indicate?	Correct	316 (83.1%)
3. Does fluorides prevent tooth decay/cavity?	Correct	225 (59.2%)
4. Do mouthwashes contain medications that can prevent or reduce gum problems?	Correct	282 (74.2%)
Attitude		
1. Do you think oral health is important for the overall health of our body?	Yes	329 (86.5%)
2. Do you take care of teeth and gums?	Yes	278 (73.1%)
3. Do you feel dental treatment is expensive?	Expensive	16 (4.2%)
4. Do you have anxiety or fear of visiting a dentist for routine check-ups or any treatment?	Yes	259 (68.1%)
5. Do you think you should visit the dentist regularly?	Yes	18 (4.7%)

Frequency distribution table of knowledge and attitude.

TABLE 3. Oral hygiene practices of students before intervention.

Questions	Choices	Correct answer n (%)
Practices		
1. How many times do you brush your teeth daily?	≥2 times	78 (20.5%)
2. How much time do you brush?	Adequate time	101 (26.5%)
3. In addition to the toothbrush and toothpaste, do you use any other measures to keep your teeth clean?	Yes	60 (15.7%)
4. What kind of toothbrush do you use?	Appropriate type	98 (25.7%)
5. How often do you change your toothbrush?	Every 3 months	48 (12.6%)
6. Do you use mouthwash?	Regularly	84 (22.1%)
7. How frequently do you eat sweets?	Occasionally	75 (19.7%)
8. How frequently do you take carbonated drinks?	Occasionally	69 (18.1%)
9. Do you rinse your mouth with water after eating?	Always	52 (13.6%)
10. Have you ever visited a dentist?	Yes	81 (21.3%)

Frequency distribution table of oral hygiene practices.

TABLE 4. Knowledge, attitude & practices regarding oral health among groups after intervention.

Questions	Correct choices	Experimental group (N = 190) n (%)	Non-experimental group (N = 190) n (%)	p value
Knowledge				
What are the signs or symptoms that indicate the presence of tooth decay or cavity?	Correct	167 (87.8%)	145 (76.3%)	0.008
What does swollen and discoloration on gums indicate?	Correct	174 (91.5%)	150 (78.9%)	0.001
Does fluoride prevent tooth decay/cavity?	Correct	170 (89.4%)	146 (76.8%)	0.004
Do mouthwashes contain medications that can prevent or reduce gum problems?	Correct	176 (92.6%)	151 (79.4%)	0.001

TABLE 4. Continued.

Questions	Correct choices	Experimental group (N = 190) n (%)	Non-experimental group (N = 190) n (%)	p value
Attitude				
Do you think oral health is important for the overall health of our body?	Yes	181 (95.2%)	174 (91.5%)	0.214
Do you take care of teeth and gums?	Yes	178 (93.6%)	161 (84.7%)	0.024
Do you feel dental treatment is expensive?	Expensive	176 (92.6%)	172 (90.5%)	0.580
Do you have anxiety or fear of visiting a dentist for routine check-ups or any treatment?	Yes	172 (90.5%)	157 (82.6%)	0.024
Do you think you should visit the dentist regularly?	Yes	172 (90.5%)	126 (66.3%)	0.001
Practices				
How many times do you brush your teeth daily?	≥2 times	171 (90.0%)	151 (79.4%)	0.008
How much time do you brush?	Adequate time	168 (88.4%)	136 (71.5%)	0.001
In addition to the toothbrush and tooth-paste, do you use any other measures to keep your tooth clean?	Yes	151 (79.4%)	145 (76.3%)	0.120
What kind of toothbrush do you use?	Appropriate type	173 (91.0%)	163 (85.7%)	0.078
How often do you change your toothbrush?	Every 3 months	164 (86.3%)	141 (74.2%)	0.012
Do you use mouthwash?	Regularly	166 (87.3%)	123 (64.7%)	0.001
How frequently do you eat sweets?	Occasionally	164 (86.3%)	146 (76.8%)	0.001
How frequently do you take carbonated drinks?	Occasionally	169 (88.9%)	154 (81.0%)	0.097
Do you rinse your mouth with water after eating?	Always	170 (89.4%)	157 (82.7%)	0.021
Have you ever visited a dentist?	Yes	175 (92.1%)	157 (82.6%)	0.075

Chi-square test was applied. Bold p-values indicate statistically significant differences ($p < 0.05$).

TABLE 5. Oral Hygiene Index-Simplified in the intervention and control groups.

Groups	Before intervention	After intervention	F value	Effect size	p value
Experimental group	2.57 ± 1.61	1.17 ± 0.55	$F(1, 58) = 136.79$	$\eta^2 = 0.70$	<0.001
Control group	2.59 ± 0.82	2.35 ± 3.71	$F(1, 58) = 0.85$	$\eta^2 = 0.01$	0.360

p-value < 0.05 was considered significant.

In this study, approximately 77.8% of students initially reported using the internet to seek information on oral healthcare. Althunayan *et al.* [24] reported that 64% of participants used social media to access oral health updates, highlighting the potential of social media to shape oral health behaviours. The widespread use of virtual platforms for health information seeking is partly due to their easy accessibility and high public acceptability. Social media can enhance children's learning outcomes in oral health interventions and promote adherence to recommended oral hygiene practices, as demonstrated by the current study. This finding aligns with several other studies showing that technologies, such as oral health videos on different social networking sites, text-messaging reminders, and WhatsApp messages, can improve knowledge, attitudes,

and oral health practices [25–28].

In the present study, the mean OHI-S score before the intervention was 2.57 ± 1.61 in the experimental group and 2.59 ± 0.82 in the control group, indicating a fair oral hygiene status among students. Similar findings were reported by Sukhabogi JR *et al.* [29], who observed a mean OHI-S index of 2.8 ± 1.1 among students, also reflecting a fair oral hygiene status.

Following the intervention in our study, the OHI-S score significantly improved in the experimental group compared to the control group. This trend is consistent with the results of Dientyah Nur Anggina *et al.* [19], who reported a significant reduction in OHI-S score among adolescents receiving social media-mediated oral health intervention. Lopes Dos Santos

R *et al.* [30] showed that mobile applications can lead to oral hygiene improvement in adolescents. Collectively, these insights underscore the impact of interactive digital interventions disseminated through diverse social media platforms on knowledge, attitude, behavior, and overall oral health. In countries such as India, where oral health diseases are highly prevalent among children and access to oral health services is variable, preventive measures are vital to reducing the burden of oral health problems.

The restricted geographical area of the sample may limit the generalizability of the findings to broader populations of school-going children. Additional studies using larger samples with a more varied sample could provide broader insight into the effectiveness of short-film content on social media in promoting oral hygiene behavior. The duration of follow-up was rather brief in the current study. Longer-term follow-up could be employed to assess the persistence of improvements in oral hygiene practices. This study was based solely on self-reported data from participants, which may be susceptible to recall bias or social desirability bias. In the future, objective or observational methods might be used to confirm self-reported oral hygiene practice. The control group in this study received chair-side educational talks, which may have influenced their oral hygiene practices independently of the intervention. Comparing the short-reel content intervention with a true no-intervention control group could provide more robust evidence of its efficacy.

5. Conclusions

The current study found that short reel content significantly enhanced students' knowledge, attitude, oral hygiene practices following the intervention. Before the intervention, students were already heavily utilizing the internet through various social media platforms, primarily due to its quick access and lack of time constraints. Short reels focus on delivering concise information through innovative content, which significantly enhances children's memory retention. If used wisely, social media can influence behavior modification and promote healthy lifestyles among 12-year-old schoolchildren. This study recommends utilizing these findings to establish successful oral health programs and achieve desired health benefits for children, as good oral health is an essential component of overall health and well-being.

AVAILABILITY OF DATA AND MATERIALS

The data will be available on reasonable request from the corresponding author.

AUTHOR CONTRIBUTIONS

SABH, SaS—conceptualization; formal analysis. ABMA, SUK, ShS—methodology; data curation. MDB, MC—software. SaS—investigation. MDB, GM—writing—original draft preparation. MC, GM—writing, review, and editing. GM—supervision; funding acquisition. MC—administration. All authors have read and agreed to the published version of

the manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Ethics Committee of the People's College of Dental Sciences and Research Centre, Bhopal, India (Approval Number: EC202179). Informed consent was obtained from all participants and their caregivers prior to study enrollment.

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CONFLICT OF INTEREST

The authors declare no conflict of interest. Giuseppe Minervini was a member of the Editorial Board of this journal at the time of submission. We declare that Giuseppe Minervini had no involvement in the peer review of this article and had no access to information regarding its peer review. Full responsibility for the editorial process for this article was delegated to JEN.

SUPPLEMENTARY MATERIAL

Supplementary material associated with this article can be found in the online version, at <https://oss.jocpd.com/files/article/2095394016465960960/attachment/Supplementary%20material.docx>.

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