



Healthy Tooth Generation: Interactive Oral Health Education Using Digital Media for Students of SMA Bina Jaya Kertapati Palembang

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Article Info	Abstract
Article History Received: 2 th May 2026 Revised: 21 th August 2026 Published: 30 th August 2026	<i>Oral health problems remain a major public health issue in Indonesia, particularly among adolescents, who often have limited knowledge and inappropriate toothbrushing practices. SMA Bina Jaya Kertapati Palembang is a senior high school located in a densely populated urban area, with most students coming from lower-middle socioeconomic backgrounds and having limited access to oral health education and services. This community service program aimed to improve students' literacy and preventive behavior related to dental and oral health through interactive health education. The team developed a digital educational video titled "Generasi Sehat Gigi" (Healthy Tooth Generation), which delivered basic concepts of oral health, correct toothbrushing techniques, recommended brushing times, and the negative impacts of poor oral hygiene. The program was implemented through classroom-based sessions combining video screening, explanation, live toothbrushing demonstrations, and interactive discussions. The activity involved 31 second-grade students and was conducted on 4 November 2025 at SMA Bina Jaya Kertapati Palembang. High levels of enthusiasm and active participation, reflected in students' relevant questions and engagement during practice, indicated an increase in awareness and motivation to maintain oral health. This program demonstrates that school-based, interactive, media-supported education can serve as an effective strategy to strengthen oral health literacy and foster healthy habits among adolescents.</i>
Keywords: oral health, dental health education, interactive media, adolescents, community service	

INTRODUCTION

Oral and dental diseases remain a persistent public health concern in Indonesia. National epidemiological data indicate that 45.3% of Indonesians experience dental caries, while 14% report swollen gums. Although 94.7% of the population reports brushing their teeth daily, only 2.8% do so at the recommended times after breakfast and before bedtime. This discrepancy shows that proper oral hygiene practices are not yet well understood, leading to preventable oral health problems among the wider community.

In South Sumatra, particularly in the Kertapati District of Palembang, awareness of oral and dental health remains low among adolescents. SMA Bina Jaya Kertapati Palembang is situated in a densely populated area where many students come from lower-middle socioeconomic backgrounds. Preliminary observations and informal discussions with teachers revealed that most students lacked adequate knowledge regarding correct toothbrushing

techniques, recommended brushing frequency, and the health implications of poor dietary habits, especially excessive sugar consumption. Furthermore, the school had limited educational resources, with no interactive or digital media being used systematically to promote oral health literacy.

School-based oral health education is particularly relevant during adolescence because this period plays an important role in the formation of independent hygiene and dietary behaviors. Previous school-based interventions have demonstrated that structured oral health education can improve students' knowledge, oral hygiene practices, and selected oral health outcomes (Yazdani et al., 2009; Hedman et al., 2015; Subedi et al., 2021). More recent interventions also indicate that education combined with practical skill development and behavioral reinforcement can strengthen oral health knowledge, self-efficacy, and preventive practices among secondary-school students (Taheri et al., 2025; Hosseini et al., 2025).

However, oral health education at SMA Bina Jaya Kertapati Palembang had not yet been systematically integrated with interactive digital media and direct toothbrushing practice. This condition indicates a practical gap between students' oral health education needs and the availability of engaging school-based interventions. Therefore, the present community service program was designed to combine digital educational media, interactive discussion, and hands-on toothbrushing practice as an accessible preventive education strategy.

Limited access to routine dental check-ups and low prioritization of oral health within families further exacerbate these issues. Many students experience preventable conditions such as tooth decay, bleeding gums, and halitosis, yet do not receive proper care due to lack of knowledge and inadequate support systems. Given that adolescence is a critical developmental stage for establishing lifelong health habits, intervention at the school level becomes essential.

SMA Bina Jaya thus represents a strategic partner for community engagement aimed at strengthening oral health literacy and promoting preventive behaviors. Adolescents are in an ideal developmental phase to internalize health-related values and adopt sustainable hygiene practices. Enhancing their understanding of oral health is also aligned with broader national goals, including preventive health promotion and the improvement of community welfare.

Based on these conditions, this community service program was designed to:

1. Improve students' understanding of the importance of maintaining oral and dental health;
2. Teach correct toothbrushing techniques through engaging, interactive digital media; and
3. Foster sustainable health habits among adolescents as part of a holistic preventive health approach.

Through an educational approach that integrates visual learning, hands-on practice, and participatory discussions, the program aims to provide students with practical skills and a deeper awareness of oral hygiene. This is expected to contribute to healthier behavioral patterns and reduce risks associated with poor oral health in the future.

Oral and dental health play a crucial role in supporting overall wellbeing and quality of life. Poor oral hygiene may lead to dental caries, periodontal disease, halitosis, and other complications that can affect nutritional intake, self-confidence, and general health. Meidina (2024) emphasizes that oral health is an essential component of public health and significantly influences an individual's health status. In Indonesia, dental caries and gum disease remain common problems, as highlighted by Hidayat and Tandari (2016), who found that these oral diseases persist due to inadequate hygiene practices and limited awareness among the population.

National data reinforce the urgency of preventive education. The 2018 Basic Health Research (Riskesdas) report states that although most Indonesians brush their teeth daily, only a small proportion practice toothbrushing at the correct times, indicating a gap between habitual behaviors and effective oral hygiene practices. This underscores the need for systematic oral health education, particularly among children and adolescents, who are in critical stages of habit formation.

School-based oral health promotion has been shown to be an effective strategy for improving knowledge and shaping positive behaviors. Sulistiani et al. (2023) demonstrated that educational programs using structured health promotion tools can significantly improve children's understanding of proper oral hygiene. Adolescents, who are more receptive to visual and interactive learning, respond well to educational media that incorporate digital components.

The adolescent stage is also pivotal for establishing long-term health behaviors. Fadjeri et al. (2022) argue that behavioral formation in adolescence strongly influences oral health outcomes in adulthood, making preventive education at this age particularly impactful. Similarly, Senjaya et al. (2019) reported a correlation between low oral health knowledge among students and increased incidence of dental problems, reinforcing the importance of early intervention in school settings.

The use of digital media in oral health promotion has gained increasing attention due to its accessibility, visual appeal, and effectiveness in enhancing comprehension. Interactive videos, animations, and digital infographics enable students to visualize correct brushing techniques and understand the consequences of poor oral hygiene more clearly than traditional lecture methods.

Digital-based approaches provide additional opportunities to improve the delivery of oral health education. The use of mobile applications has been associated with improvements in oral health knowledge and periodontal outcomes among adolescents, while social media platforms have also demonstrated potential for supporting adolescent oral health literacy (Marchetti et al., 2018; Tse et al., 2015). Interactive digital strategies such as educational games can further support dietary knowledge and toothbrushing practices among schoolchildren (Aljafari et al., 2022). Multimedia-based oral health education has also been shown to increase teenagers' knowledge and satisfaction with health education materials (Bakhtiar et al., 2025). In addition, combining verbal instruction with visual or demonstration-based educational methods can strengthen the effectiveness of oral hygiene instruction among school-age populations (Rajab et al., 2022).

Based on previous studies and practical evidence, integrating interactive digital media with hands-on learning emerges as an effective approach for fostering oral health literacy among adolescents. This foundation supports the development of the community service program implemented at SMA Bina Jaya Kertapati Palembang, which aims to combine visual education, practical demonstrations, and direct engagement to build sustainable oral hygiene behaviors.

METHOD

This community service program was conducted on 4 November 2025 at SMA Bina Jaya Kertapati Palembang and involved 31 second-grade students. The program was designed to address two primary challenges identified at the school: low oral health literacy and limited access to interactive oral health education. The implementation method combined digital media-based learning with face-to-face engagement to enhance students' understanding and

practical skills in maintaining oral hygiene. The activity consisted of interactive education, guided discussion, toothbrushing demonstration and practice, and a post-session evaluation.

1. Preparation Phase

The preparation stage involved several key activities:

a. Development of Educational Materials

The team produced a 5-7-minute interactive educational video titled “*Generasi Sehat Gigi*”, containing essential information on oral health, proper toothbrushing techniques, recommended brushing times, and the consequences of poor oral hygiene. Additional supporting materials, including a post-session comprehension quiz and observation sheets for toothbrushing practice, were prepared to support the evaluation process.

b. Coordination with School Partners

Initial meetings were conducted with the school principal, teachers, and student representatives to discuss program objectives, benefits, and logistical arrangements. This ensured alignment and readiness among all stakeholders.

2. Implementation Phase

The core activities were executed through the following components:

a. Interactive Classroom Education

Students participated in classroom-based sessions where the educational video was screened, followed by guided discussions to reinforce key concepts. This visual approach aimed to improve comprehension and sustain student engagement.

b. Hands-On Toothbrushing Simulation

Using dental models and toothbrushing tools, students were instructed and supervised to practice correct brushing techniques. The facilitators observed and provided corrective feedback to ensure proper execution.

c. Evaluation of Understanding

Students completed a simple post-session quiz to assess their immediate comprehension of the oral health material presented during the activity. In addition, facilitators observed students during the toothbrushing simulation to evaluate their ability to follow the demonstrated brushing steps. The evaluation was descriptive and focused on immediate learning responses, participation, and practical performance rather than on statistically measured changes in knowledge or behavior.

3. Technological Integration

Digital technology played a central role in the program through:

- a. An educational video distributed via platforms such as YouTube to broaden access beyond the session.
- b. Optional digital infographics used to enhance visual reinforcement during instruction.
- c. Provision of digital copies of materials to teachers to support future independent learning activities.

4. Mentoring and Sustainability

To support long-term program impact:

- a. Teachers received digital materials and guidance on integrating oral health education into routine school activities.
- b. Students were encouraged to continue practicing proper oral hygiene through follow-up reminders and informal mentoring.
- c. The program opened opportunities for potential collaboration between the school and local health facilities for future preventive dental check-ups.

5. Roles and Responsibilities

The community service team functioned through coordinated roles:

- a. Team Leader: Oversaw implementation, coordinated activities, and served as primary facilitator during educational sessions.
- b. Supporting Lecturers: Provided content expertise, assisted in classroom facilitation, and evaluated student performance.
- c. Students (Team Assistants): Produced and edited the educational video, assisted with documentation, facilitated toothbrushing practice, and helped manage evaluation instruments.

RESULT AND DISCUSSION

Result

The community service activity was carried out on 4 November 2025 at SMA Bina Jaya Kertapati Palembang and involved 31 second-grade students, consisting of 17 male and 14 female participants. The implementation proceeded smoothly in accordance with the planned method, beginning with an introductory session on the importance of oral and dental health. Students were then guided through an interactive learning experience using a digital educational video designed to illustrate basic oral health concepts, examples of common dental problems, and correct toothbrushing techniques.

Throughout the session, students showed high levels of enthusiasm and engagement. The interactive video successfully captured their attention, and the subsequent discussion encouraged active participation. Several students asked relevant questions, demonstrating curiosity and increased understanding of the topics presented, particularly on identifying signs of dental disease, proper oral hygiene routines, and strategies for maintaining healthy teeth and gums.

The hands-on toothbrushing simulation further strengthened the learning experience. Guided by the facilitators, students practiced proper brushing movements and received direct feedback to correct common mistakes. Observations from this session indicated that most students were able to follow the steps accurately after the demonstration.

The evaluation conducted in this program was descriptive and observational. A formal quantitative pre-test and post-test design was not implemented; therefore, changes in students' knowledge could not be expressed as numerical score differences or statistically tested. Immediate outcomes were assessed through students' responses during the post-session quiz, their participation in interactive discussions, and facilitators' observations during the toothbrushing simulation. These findings should therefore be interpreted as indicators of immediate understanding, engagement, and practical participation rather than as evidence of statistically measured behavioral change.

Overall, the program achieved its immediate objective of strengthening students' engagement with oral health education and providing practical knowledge regarding appropriate oral hygiene practices. Active participation during discussion and students' ability to follow the demonstrated toothbrushing steps indicate that the combination of digital media and direct practice was well received as a school-based educational approach.

Discussion

The implementation of the oral health education program at SMA Bina Jaya Kertapati Palembang demonstrated that a participatory and media-based approach can support student engagement and understanding of oral health. The active involvement of students during discussions and practical sessions suggests that combining visual educational media with direct

practice provides an engaging learning environment for adolescents. These observations also indicate that the educational approach was relevant to the oral health literacy needs identified at the partner school.

Students' questions during the session provide insight into their evolving awareness. The first question how to recognize signs of dental disease indicates an emerging concern for preventive health. This aligns with findings from the 2018 Riskesdas report, which highlights widespread dental problems in Indonesia and underscores the need for preventive education to encourage early detection and management.

The second question how to perform proper oral care demonstrates increased interest in applying correct hygiene practices. As supported by Hidayat and Tandiar (2016), improper brushing techniques and poor oral hygiene behavior contribute substantially to the high prevalence of dental caries and periodontal issues in Indonesia. Reinforcing correct brushing habits, including brushing after breakfast and before bedtime, is therefore crucial in reducing oral health risks. The simulation activities in this program provided students with practical experience that strengthened their understanding of recommended techniques.

The third question how to maintain long-term oral health shows students' recognition of the behavioral and psychological factors that influence oral hygiene. Research by Fadjeri et al. (2022) and Senjaya et al. (2019) confirms that self-discipline, social support, and sustained education play important roles in shaping positive oral health practices among adolescents. By integrating both theoretical explanations and hands-on demonstrations, the program addressed not only knowledge but also motivation and self-efficacy in maintaining oral health.

Furthermore, the use of interactive digital media contributed to the program's effectiveness. Visual learning tools, such as educational videos, have been shown to improve comprehension and retention among adolescents, who tend to respond well to dynamic and contextually relevant content. The positive student responses in this program support the findings of Sulistiani et al. (2023), who reported that digital-based promotion enhances children's oral health understanding more effectively than conventional lecture methods.

The findings are also consistent with broader evidence from school-based oral health interventions. Subedi et al. (2021) reported that structured oral health education among adolescents improved knowledge, attitudes, practices, plaque control, and gingival health. Similarly, Taheri et al. (2025) found improvements in oral health knowledge, attitudes, self-efficacy, and preventive practices following structured educational sessions among secondary-school students. Digital approaches have also shown promising educational benefits. Marchetti et al. (2018) demonstrated the potential of mobile-assisted oral health education, while Aljafari et al. (2022) showed that interactive game-based education could support oral health learning. More recently, Bakhtiar et al. (2025) demonstrated that multimedia-based oral health education can enhance teenagers' knowledge and engagement. These studies strengthen the rationale for combining visual digital media with direct practical activities in school-based oral health promotion.

Nevertheless, several limitations of the present program should be acknowledged. First, the intervention was conducted within a relatively short educational period, which limited the ability to assess whether the knowledge and skills demonstrated during the activity were maintained over time. Second, no long-term follow-up was conducted to determine whether students consistently applied the recommended toothbrushing practices in their daily routines. Third, the program did not employ a control group or a formal quantitative pre-test-post-test design. Consequently, the observed student responses cannot be interpreted as evidence of statistically significant changes in knowledge or behavior. The evaluation should instead be understood as a descriptive assessment of immediate engagement, comprehension, and practical participation. Future community service programs should incorporate standardized pre- and post-intervention assessments, longer monitoring periods, and follow-up evaluations

to provide stronger evidence regarding the effectiveness and sustainability of school-based digital oral health education.

Overall, the implementation of this community service initiative indicates that combining digital education with direct practical activities provides a relevant and engaging learning experience for adolescents. The approach facilitated students' exposure to oral health information, encouraged active participation, and provided opportunities to practice appropriate toothbrushing techniques under direct guidance. Although the program did not quantitatively measure long-term behavioral change, the immediate responses observed during the activity support the potential use of interactive digital education as a complementary strategy for school-based oral health promotion.

CONCLUSION

The community service program on interactive oral health education at SMA Bina Jaya Kertapati Palembang successfully achieved its primary objective of improving students understanding and awareness of proper dental and oral hygiene. The combination of digital educational media, classroom discussions, and hands-on toothbrushing simulations proved effective in engaging students and enhancing their comprehension of key oral health concepts.

Students demonstrated active participation, expressed curiosity through relevant questions, and showed improved ability to practice correct toothbrushing techniques following guided demonstrations. These outcomes highlight the importance of integrating visual, interactive, and practice-based learning approaches in school-based oral health promotion.

The program also reinforced previous evidence indicating that adolescence is a critical period for establishing healthy lifelong habits. By providing accessible and engaging health education, this initiative contributes to shaping preventive behaviors that can reduce the risk of oral diseases in the future.

Overall, this community service activity offers a meaningful contribution to strengthening oral health literacy among adolescents and underscores the potential of digital media as an effective tool for delivering health education in school environments.

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