ORAL AND DENTAL HEALTH EDUCATION TO IMPROVE STUDENT KNOWLEDGE AT SMAN 5 SOUTH TANGERANG

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ABSTRACT

Oral and dental health among adolescents remains a significant public health problem, particularly due to the increasing consumption of sugar-sweetened beverages. Excessive sugar intake can trigger dental caries through enamel demineralization caused by bacterial activity in the oral cavity. This community service activity aimed to improve students' knowledge, awareness, and behavior in maintaining oral and dental health, especially regarding the impact of sugar-sweetened beverage consumption on general and oral health. The activity was conducted on April 20, 2026, at SMAN 5 Tangerang Selatan, involving 136 students. The methods used included interactive lectures, demonstrations of the Bass toothbrushing technique, and dental floss usage, supported by educational media such as posters and leaflets. Evaluation was carried out using pre-test and post-test. The results showed that prior to the intervention, students had low knowledge regarding oral hygiene and the impact of sugary drinks. After the intervention, there was an improvement in understanding as indicated by post-test results and active student participation. In conclusion, interactive education combined with practical demonstrations is effective in improving adolescents' knowledge and awareness of oral and dental health.

Keywords: Adolescents, Oral Health, Sugar-Sweetened Beverages, Dental Caries, Education

1. INTRODUCTION

The prevalence of dental and oral health problems in Indonesia remains relatively high, including among adolescents. Oral diseases also remain a major global public health concern, affecting populations across different age groups and creating substantial health and social burdens worldwide (World Health Organization, 2022). According to the 2023 Indonesian Health Survey (Kementerian Kesehatan Republik Indonesia, 2023), the prevalence of dental caries reached 82.8%, indicating that the majority of the population, including the adolescent age group (10–19 years), experience caries-related problems. In addition, based on the 2018 Basic Health Research (Riskesdas), the national caries prevalence was recorded at 57.6%, remaining high in several regions, including Banten Province. These data reinforce the notion that dental caries continues to be a significant public health issue, emphasizing the importance of oral health promotion and preventive strategies as integral components of public health programs (Petersen, 2017).

This condition indicates that adolescents constitute a vulnerable group for common diseases such as obesity, diabetes, reduced immune function, cardiovascular disease, kidney and liver disease, as well as oral and dental disease, all of which are influenced by health-related behaviors such as toothbrushing habits and the consumption of sugary foods. According to Zubaedah (2020), 53.1% of adolescents aged 13–18 years consume more sugar than other age groups. Frequent consumption of free sugars is strongly associated with the development of dental caries because oral bacteria metabolize fermentable carbohydrates and produce acids that contribute to enamel demineralization (Sheiham & James, 2016). Evidence also indicates that restricting sugar intake contributes to a reduction in caries risk (Moynihan & Kelly, 2018). Therefore, more intensive promotive and preventive efforts are required for this population.

Beyond dietary factors, poor oral and dental health behavior also serves as a major risk factor. Improper toothbrushing habits, failure to brush before sleep, and insufficient use of dental floss can lead to plaque accumulation, which in turn causes caries and periodontal disease (Newman et al., 2019). Adolescents' limited knowledge and awareness regarding the importance of maintaining oral and dental health further exacerbate this condition (Alanzi et al., 2021). Improvement of oral and dental health can be pursued through promotive and preventive approaches, including interventions that address shared behavioral risk factors such as high sugar consumption and inadequate oral hygiene (Watt & Sheiham, 2019). One important preventive strategy is health education. Interactive education accompanied by hands-on demonstration has been shown to be more effective in improving knowledge and encouraging behavioral change than conventional methods (Alanzi et al., 2021). The use of educational media such as posters and leaflets can also help enhance understanding and information retention (Kwan et al., 2017). Oral and dental health education is therefore a relevant strategy for preventing dental health problems among adolescents.

Schools represent a strategic setting for implementing health education, as they can reach adolescents directly and systematically. School-based oral health education represents an applicable preventive approach for increasing awareness and encouraging healthier dental practices among adolescents (Waruwu et al., 2025). School-based programs have also proven effective in improving health behaviors, including the maintenance of oral and dental hygiene (Kwan et al., 2017). This community service activity was carried out through oral and dental health education at a school, representing an appropriate and applicable form of intervention.

Based on preliminary observations at SMAN 5 South Tangerang, most students had limited understanding of the impact of sugary beverage consumption on oral and dental health. Some students were also unfamiliar with the correct toothbrushing technique and the use of dental floss. This condition reflects a gap between knowledge and oral and dental health behavior among adolescents that requires appropriate educational intervention (Alanzi et al., 2021). With these considerations, this activity was designed to improve students knowledge, awareness, and behavior in maintaining oral and dental health, particularly regarding sugary beverage consumption and correct dental care techniques, on the premise that improved knowledge is the first step toward health behavior change. The promotive and preventive approach emphasizes the importance of education as a means of prevention before more serious health problems arise, including controlling sugar consumption and practicing oral hygiene as key steps in caries prevention (Akinsolu et al., 2024; Peres et al., 2019). It is expected that this structured, interactive, and practice-based educational activity would increase students' knowledge and awareness, thereby encouraging independent and sustainable changes in oral and dental health behavior, and could serve as a model for educational interventions applicable in other school settings.

2. METHOD

This community service activity was conducted on Monday, 20 April 2026, from 07:00 to 07:40 WIB at SMAN 5 South Tangerang, involving four tenth-grade classes with a total of 136 students present. The activity took the form of oral and dental health counseling delivered through an interactive lecture accompanied by hands-on demonstration (Alanzi et al., 2021). The material presented covered the importance of maintaining oral and dental health, the impact of sugary beverage consumption on the occurrence of caries, the correct toothbrushing technique using the Bass method, the use of dental floss, and the use of mouthwash. The counseling session employed educational media in the form of posters, leaflets, dental models, toothbrushes, and dental floss (Sari et al., 2021). Posters were used to convey the material visually for easier comprehension, while leaflets were distributed to students as reading material that could be reviewed independently after the activity. Before the counseling session began, students completed a pre-test to determine their baseline level of knowledge regarding oral and dental health. After the material was delivered and demonstrated, a post-test using the same questionnaire was administered to assess improvement in student understanding (Handayani et al., 2022). As part of the activity, students were also invited to practice the correct toothbrushing technique directly. Evaluation of the activity was based on the pre-test and post-test results as well as student engagement during the counseling session.

3. RESULTS AND DISCUSSION

This community service activity employed posters as a medium for oral and dental health education, as illustrated in Figure 1. Poster media were selected because they can convey information visually in an attractive and easily understood manner, and are considered effective in improving knowledge and encouraging health behavior change, as they help clarify the intended message (Sari et al., 2021). The selection of posters and leaflets was based on field conditions indicating limited facilities and infrastructure, particularly the unavailability of supporting media such as a projector. Under these conditions, printed media served as an effective alternative for conveying information. Posters functioned as a visual medium capable of capturing attention and facilitating rapid comprehension, while leaflets served as a reinforcing medium that participants could take home, allowing them to review the information independently.

The poster presented key information visually, such as the risks of excessive sugar consumption to general and dental health and the correct steps for toothbrushing and dental floss use. The leaflet, shown in Figure 2, provided more detailed yet systematic and concise explanations covering the appropriate time to brush teeth, methods for maintaining oral hygiene, and the risk of sugary food consumption for caries. The use of dental floss is important for cleaning the spaces between teeth that a toothbrush cannot reach. The floss is inserted gently between the teeth and moved up and down along the tooth surface down to below the gumline. Flossing is recommended once a day, particularly before brushing at night, to reduce plaque and maintain gum health.

The toothbrushing method recommended in this program was the Bass technique, an effective method for removing plaque around the gumline. This technique involves positioning the toothbrush at a 45-degree angle toward the gums, applying small, gentle vibrating motions, and finishing with a sweeping motion from the gums toward the tooth surface. Brushing should be performed evenly for approximately two minutes, at least twice a day, to help prevent caries and gum disease. Mouthwash can serve as a complement to oral hygiene. It should be used after brushing, by rinsing for 30–60 seconds according to the instructions, without rinsing with water immediately afterward so that its active ingredients can work optimally. The choice of mouthwash should be tailored to individual needs, such as products containing antiseptic agents or fluoride. However, mouthwash use does not replace flossing and brushing, but instead serves as a supplement to daily oral care.



Figure 1. Poster media used in the counseling activity

The counseling activity was conducted interactively and accompanied by demonstrations of the correct toothbrushing technique and dental floss use. This demonstration method helped students understand the material more clearly, as they not only received theoretical explanations but were also able to observe and practice the techniques directly.

Table 1. Results of the Pre-test and Post-test

Number of Correct Answers	*Pre-test*	*Post-test*
5	8	52

Number of Correct Answers	*Pre-test*	*Post-test*
4	24	40
3	38	14
2	26	3
1	14	1
Mean	2.95 ± 1.10	4.28 ± 0.72
Total	110	110

The oral and dental health education activity was conducted among students from four classes, totaling 136 students. However, only 110 students completed both the pre-test and post-test in full, meaning that 26 students did not take part in these evaluations, as shown in Table 1. The pre-test results showed that most students still had a low level of knowledge regarding the correct toothbrushing technique and the use of dental floss. Students had not yet understood the appropriate time to brush their teeth, the correct brushing motion, or how to properly clean between the teeth. After completing the pre-test, participants were given a leaflet as supplementary educational material to reinforce their understanding of the content delivered during the counseling session.

Beyond the improvement in knowledge, this activity also brought about a shift in students' attitudes toward sugar consumption habits. Students began to recognize that the sweet beverages they frequently consume daily pose a risk to dental health, prompting a desire to limit their consumption. Interactive discussion during the counseling session also revealed that students had previously been unaware of the direct link between sugary drink consumption and the occurrence of dental caries. The education provided helped students better understand the importance of maintaining appropriate consumption patterns and adopting good dental care habits as a preventive measure.





Figure 2. Leaflet distributed at SMAN 5 South Tangerang

The counseling session also addressed the habit of consuming sugary foods and beverages, which contributes to the occurrence of dental caries. Residual sugar on the tooth surface is fermented by bacteria into acid, which can damage tooth enamel. If this condition persists continuously, it can lead to caries, pain, and impaired chewing function (Moynihan & Kelly, 2018). Changes in dietary habits and oral and dental hygiene practices are therefore necessary. The post-test results following the counseling and demonstration showed an improvement in student knowledge, as presented in Table 1. Students were able to re-explain the correct toothbrushing technique and demonstrated an understanding of the steps involved in using dental floss. This indicates that an educational method accompanied by demonstration and supported by poster and leaflet media is effective in improving student understanding.



Figure 3. Oral and dental health education activity at SMAN 5 South Tangerang

During the counseling session, students displayed a high level of enthusiasm, reflected in their active participation in asking and answering questions as well as taking part in the demonstration, as shown in Figure 3. Participant

enthusiasm is one indicator of the success of health education, as active engagement enhances comprehension and receptiveness to the information provided (Handayani et al., 2022).

4. CONCLUSION

Oral and dental health counseling accompanied by demonstrations of toothbrushing technique and dental floss use proved effective in improving student knowledge at SMAN 5 South Tangerang. The pre-test results indicated that most students still had limited understanding of the risks associated with high-sugar beverage consumption on general and oral health, as well as of proper dental hygiene practices. The provision of leaflets as an initial educational medium, followed by interactive education using posters and hands-on demonstration, enabled students to understand the material both theoretically and practically. The post-test results showed an improvement in knowledge, with students able to understand the risks of excessive sugar consumption and to demonstrate the correct toothbrushing technique and dental floss use. This structured, interactive educational approach, supported by media and demonstration, was effective in improving knowledge and has the potential to foster long-term preventive behavior among adolescents in maintaining oral and dental health.

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