

EDUCATION ON THE EFFECTS OF ELECTRONIC CIGARETTES AND COFFEE CONSUMPTION ON ORAL AND DENTAL HEALTH AT SMAN 7 TANGGERANG

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ABSTRACT

Adolescents are a group that is highly vulnerable to adopting unhealthy lifestyles such as smoking and consuming foods and beverages high in sugar. Currently trending among teenagers and young adults is the habit of smoking electronic cigarettes as an alternative to conventional cigarettes and consuming coffee with various flavors that are high in sugar. Social factors such as peer and family influence, as well as media marketing, increase their risk of engaging in these behaviors. This unhealthy lifestyle will have an impact on their overall physical health, as well as their dental and oral health. Dental and oral health education has been carried out by various related parties, but teenagers' understanding and behavioral changes are temporary. Therefore, an age-appropriate interactive approach is needed so that the information conveyed is interesting and easy to understand. School is an ideal place to promote health because most of their time is spent there. This period is a critical stage in life, where behavioral patterns are established, and it can indicate their future health status. In addition, children can learn new information quickly at this stage. The sooner habits are formed, the longer the impact will last. Messages conveyed in health promotion programs can be repeated regularly during the school period by taking current themes that interest children and adolescents.

Keywords: School, E-Cigarettes, Coffee Consumption, Oral Health Education

1. INTRODUCTION

Oral health is an integral part of overall health, as oral health affects overall health. In general, a person is considered healthy not only when their body is healthy, but also when their oral cavity and teeth are healthy. Dental and oral health issues are a particular concern in health development, and one of the most common problems currently found is the vulnerability of school-age children to dental health issues. Education about health, especially dental and oral health, is an effort to improve human health and well-being.

Oral health problems in children and adolescents are a major challenge in public health, both globally and nationally. Schools are ideal settings to promote oral health. An individual spends most of their childhood and adolescence time at schools. This period is a critical stage of the life course, during which behavioural patterns are built, and that may indicate their future health status. Moreover, children can learn new information rapidly at this stage. The sooner habits are formed, the longer the impacts last. The messages conveyed in health promotion programmes can be repeated regularly during the school period. Besides helping children to develop personal skills to choose a healthy lifestyle, oral health promotion may support the creation of a healthy school environment (Khoshnevisan et al., 2017). It is suggested that school-based oral health programs with multiple levels of influence may advance oral health equity (Gargano et al., 2019).

School children, especially high school teenagers, are more interested in factual information, new findings, current trends, and information media such as audiovisual media in the form of videos, posters, leaflets, and models or phantoms delivered directly or through social media such as Instagram, TikTok, Twitter, and so on. The issues raised as educational topics must be current so that the health information we convey is more interesting and memorable (Bramantoro et al., 2021 & Khafid et al., 2023).

The use of electronic cigarettes (vapes) is currently trending among teenagers and even adults. Some argue that e-cigarettes pose lower health risks than conventional cigarettes, leading people to switch to e-cigarettes. Vaping has become a popular alternative because the process resembles traditional smoking and is believed to be safer than conventional smoking. E-cigarettes work by using battery power to produce vapor from a cartridge containing humectants (such as propylene glycol or glycerol), flavorings, and nicotine, which is then inhaled. Visually and physically, e-cigarettes resemble tobacco cigarettes in their use (Thornburg et al., 2016). The negative effects of smoking and vaping caused by nicotine include the risk of various diseases such as cancer, coronary heart disease, stroke, aortic aneurysm, and other vascular diseases. In addition, smoking and vaping can also cause respiratory problems and reproductive problems such as premature birth and infertility in women. Nicotine has the effect of

stimulating the release of catecholamines such as epinephrine and norepinephrine, which can cause blood vessel constriction, increased blood pressure, and excessive workload on the heart. This can reduce blood and oxygen flow to body tissues, causing chest pain and other health problems. (Pane et al.,2022)

In addition to electronic cigarettes, another habit among teenagers and adults today is coffee consumption. Smoking and drinking coffee are common sights at gatherings, coffee shops, restaurants, and even within families. Similar to smoking, coffee consumption, especially the currently popular milk coffee, has adverse effects on health. The United States Food and Drug Administration recommends 400 milligrams of caffeine, or the equivalent of four cups of unsweetened brewed coffee, as the safe daily caffeine intake for healthy adults. The side effects of caffeine consumption range from mild to severe to fatal. The dose consumed and a person's tolerance level will determine the effects of caffeine on that person. Anxiety, restlessness, insomnia, facial flushing, increased frequency of urination, increased or irregular heart rate are mild side effects of caffeine. Severe side effects of caffeine can cause hallucinations, disorientation, psychosis, seizures, arrhythmia, ischemia, and rhabdomyolysis. Fatal side effects of caffeine can lead to death, usually associated with cardiac arrhythmia, hypotension, aspiration disorders, and myocardial infarction. Consuming coffee without sugar can lower blood glucose response. However, the coffee consumption we often encounter is coffee that has been mixed with sugar, creamer, and even other flavorings. Based on research, statistics show that there is an increase in systolic and diastolic blood pressure and a significant increase in blood glucose levels 45 minutes after consuming coconut sugar milk coffee. (Dewi K.K.,et al 2025). The impact of electronic cigarette use and coffee consumption on general health significantly affects dental and oral health. Smoking and coffee consumption can cause oral cancer, gum inflammation, periodontal disease, cavities, unsightly tooth discoloration, bad breath, and reduced wound healing ability, especially in the oral cavity, and even tooth loss (Beklen et al.,2021, Dewi K.K.,et al 2025 & Arini et al.,2023)

Adolescents are a group that is highly vulnerable to adopting unhealthy lifestyles such as smoking and tobacco use, and consuming foods and beverages high in sugar because their developing brains are more sensitive to nicotine and caffeine. Social factors such as peer and family influence, as well as media marketing, increase their risk of engaging in these behaviors. These unhealthy lifestyles will have an impact on their overall physical health as well as their dental and oral health. Various prevention efforts have been carried out by various parties. Interventions in the form of health education, especially oral health education, have been carried out periodically by various parties, such as health agencies, schools, and the community. However, the effectiveness of these interventions is often limited to short-term behavioral changes without a continuous evaluation mechanism. This is a problem in this study, so various more appropriate educational strategies are needed so that the knowledge acquired by school children is remembered in the long term and can change their behavior.

Based on these issues, we planned oral health education activities with themes that are currently trending among teenagers, namely electronic cigarette smoking and coffee consumption. These themes are related to health issues, especially oral health, caused by electronic cigarette smoking and coffee consumption. Through case presentations and interactive discussions with school students, the provision of information and simulations of proper dental care, it is hoped that this program can provide school students with a deep understanding of the adverse effects of unhealthy lifestyles, increase students' awareness of maintaining general health and oral health in particular. The education is designed periodically with different themes and varied information delivery techniques so that the messages conveyed in the health promotion program can be repeated regularly during the school period. This will help school students consistently develop personal skills to choose a healthy lifestyle, thereby supporting the creation of a healthy school environment.

2. METHOD

The methods used in this educational activity were health education and promotion, which involved presenting case reports related to the theme through PowerPoint presentations and posters, simulating proper tooth brushing techniques, interactive discussions, and evaluating students' understanding by giving quizzes through the Kahoot app and interactive games. The activity was carried out in three stages, namely preparation and equipment, implementation, and evaluation of the activity. This activity was held on Wednesday, July 24, 2024, at SMAN 7 Tangerang, located on Jalan Perintis Kemerdekaan I Babakan, Tangerang District, Tangerang City, Banten. The participants consisted of three classes of 12th grade students with a total of 110 students.

Preparation was carried out two weeks before the activity by conducting a survey to determine the location and facilities available at the activity site that would support the implementation of education, arranging permits, and ensuring the right time for implementation with the school so as not to interfere with teaching and learning activities. Next, educational materials were prepared in the form of PowerPoint presentations, Canva presentations, and posters,

and the equipment needed during the education was prepared. During the implementation phase, the materials were presented through audiovisual media, followed by a simulation of proper tooth brushing techniques. This was followed by interactive quizzes and games, with prizes awarded to active participants.

To increase the educational benefits for students and the entire school community, several posters were put up on the school bulletin board and further planning was carried out for regular educational activities. Posters are a health education tool that is easy for students to understand, as they contain key material and short messages that attract attention due to their combination of attractive shapes and images. This has also been proven in several previous studies, which state that posters have been shown to improve knowledge retention, which indirectly helps change student behavior (Sukarsih et al., 2019). This community service program through health education in schools aims to increase awareness and skills among children and adolescents in maintaining dental and oral hygiene through outreach, training, and evaluation activities (Fajriah et al., 2025)

3. RESULTS AND DISCUSSION

The activity was carried out smoothly according to the schedule that had been determined during the preparation stage. The activity began with strict health protocols. This activity was held at SMAN 7 Tangerang with 110 students divided into 3 classes. Educational material was presented using Power Point on “the effects of electronic cigarette use and coffee consumption on dental and oral health.”



Figure 1. The condition of class XII at SMAN 7 Tangerang during education

Education was also provided using posters and videos on how to properly care for teeth and mouth. Posters are inherently visual, communicative, and able to convey information in a concise, clear, and engaging manner (Pedwell et al., 2017). It is assumed that someone who repeatedly sees educational media, such as posters displayed in strategic locations such as public spaces, schools, and health services, is likely to develop a higher perception of the importance of maintaining dental hygiene, which ultimately contributes to increased knowledge (Linus and Bassey, 2025)



Figure 2. Several posters as educational tools

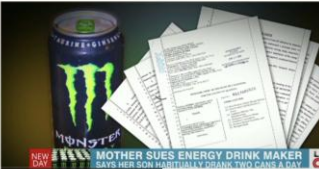
The use of visual media such as posters and videos has been proven to strengthen the internalization of knowledge. These media work not only through cognitive pathways but also affective ones, as they are able to generate emotional engagement among students. Bramantoro et al. (2021) found that school-based health programs that employed visual aids were more effective in improving oral health knowledge retention compared to traditional lecture methods. In this study, the results are consistent with those findings, emphasizing the importance of innovative media in health promotion.

To assess the students' understanding, games and quizzes were conducted using the Kahoot application, which was responded to with great enthusiasm. Giving prizes to students who were considered active increased the positive response and enthusiasm of the students to learn the information provided in depth.



Figure 3. Quiz to evaluate students' understanding of educational material using the Kahoot app.

The application of interactive quizzes through Kahoot added both competitive and collaborative dimensions to the learning process. This mechanism not only enhanced students' intrinsic motivation but also provided educators with real-time insights into their level of understanding. This aligns with the gamification approach in health education, which has been shown to increase student participation and encourage positive behavioral changes among adolescents.



KASUS NYATA!

Energy drink maker Monster sued for teen's death

The mother of a 19-year-old who regularly consumed Monster energy drinks has sued the beverage maker after her son died of cardiac arrest. The suit, filed in California Superior Court on June 25, alleges that Monster Beverage Corporation encourages teens and young adults to consume their drinks quickly and fails to provide safety warnings about health risks.



Alex Morris, the plaintiff's deceased son, drank two 16-oz. cans of Monster energy drinks per day for three years prior to his death. Morris collapsed on July 1, 2012, and went into cardiac arrest after drinking two energy drinks in a 24-hour period. The autopsy report listed his cause of death as cardiac arrhythmia due to cardiomyopathy. He is survived by his mother Paula Morris, the plaintiff in the case.

"Energy drinks contain massive and excessive amounts of caffeine that may lead to a host of health problems in young people, including heart problems, and banning companies from marketing these products to adolescents is a common sense action that we can take to protect the health of American kids," Dr. Alexander Ding, AMA board member, said in a June 18 release.



MITOS & FAKTA

TENTANG ROKOK ELEKTRIK

MITOS

Rokok elektrik bebas nikotin dan aman untuk kesehatan

FAKTA

Banyak rokok elektrik yang mengandung nikotin, meskipun kadarnya bisa bervariasi. Nikotin bersifat adiktif dan dapat membahayakan kesehatan otak dan paru-paru, terutama pada remaja dan orang dewasa muda.

FACTS

MYTHS

Figure 4. Various interesting facts and cases presented in the educational material

The presentation of material by showing case studies on the adverse effects of smoking and excessive coffee consumption with added sugar, which has become a trend among teenagers, received a positive response from students thanks to effective communication techniques appropriate for teenagers.

It is hoped that the understanding gained during the education process will change student behavior. Behavior is a response or reaction to a stimulus (external stimulus). Behavior occurs through a response process, so this theory is often referred to as the “S-O-R” theory or Skinner's Stimulus Organism Theory. Various studies have proven that behavior based on knowledge lasts longer than behavior not based on knowledge. Before an individual adopts new behavior, a sequential process occurs within them, namely (1) Awareness, (2) Interest, (3) Trial, and (4) Adoption (Pakpahan et al., 2021).

In relation to the S-O-R theory, the stimulus provided through educational materials and interactive media generated responses in the form of enthusiasm and active participation among students. However, the sustainability of such responses should be evaluated through long-term follow-up. Gargano et al. (2019) argue that school-based interventions are more effective when coupled with regular monitoring and integration into the school's health curriculum, ensuring that behavioral changes are maintained over time.



Figure 5. The enthusiasm of students and school leaders for oral health education activities

Beyond knowledge improvement, this activity also has the potential to reshape social norms within the school environment. When students observe that most of their peers adopt healthier behaviors, collective norms are established that can reinforce sustained behavioral change. Thus, oral health education programs not only target individuals but also contribute to building a broader culture of health within the school community.

Oral health is one of the things that needs to be taken care of. This is because healthy teeth enable all activities to run smoothly. The habit of consuming foods and beverages that are high in sugar is an important factor in the development of dental caries. Several factors that cause dental caries include previous experience of caries, oral hygiene, dental plaque, tooth structure, eating and drinking habits that involve sugar, brushing techniques, age, gender, race and culture, smoking, economic status, and educational level (Susilo et al., 2021).

The practical implication of this activity highlights the need for stronger collaboration between schools, health professionals, and parents. In doing so, the knowledge acquired by students does not remain confined to the classroom but is reinforced in daily life. A multilayered strategy of this kind ensures that the information delivered evolves into consistent and long-term healthy habits.

4. CONCLUSION

Dental and oral health education at SMAN 7 Tangerang is one of the right strategies to help prevent health problems from an early age. An interactive approach appropriate for their age makes it easier for us to attract their attention by raising educational themes that are current and in line with today's youth trends. Teenagers are a group that is very vulnerable to adopting unhealthy lifestyles such as smoking and consuming foods and drinks high in sugar. Social factors such as peer and family influence, as well as media marketing, increase their risk of engaging in such

behaviors. These unhealthy lifestyles will have an impact on their overall physical health, as well as their dental and oral health.

Schools are ideal places to promote health because children spend most of their time there. This period is a critical stage in their lives, during which behavioral patterns are formed, and it can indicate their future health status. In addition, children can learn new information quickly at this stage. The sooner habits are formed, the longer their impact will last. The messages conveyed in health promotion programs can be repeated regularly during the school period.

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REFERENCES

- Khoshnevisan MH, Pakkhesal M, Jadidfard M-P, Nejad G. School-based oral health promotion: a thorough review. 2017;35: 143–149.
- Gargano L, Mason MK, Northridge ME. Advancing Oral Health Equity Through School-Based Oral Health Programs: An Ecological Model and Review. *Front Public Heal*. 2019;7: 359
- Bramantoro T, Santoso CMA, Hariyani N, Setyowati D, Zulfiana AA, Nor NAM, Nagy A, Pratamawari DNP, Irmalia WR. Effectiveness of the school-based oral health promotion programmes from preschool to high school: A systematic review. *PLoS One*. 2021 Aug 11;16(8):e0256007. doi: 10.1371/journal.pone.0256007. eCollection 2021.PMID: 34379685
- Khafid M, Putriwijaya FD, Prakosa BR, Salsabila N. Efektivitas Penyuluhan Media Poster Secara Luring dan Daring dalam Meningkatkan Kesehatan Gigi. *MKGK (Majalah Kedokteran Gigi Klinik) Clinical Dental Journal UGM Vol 9 No 2 – Agustus 2023 ISSN 2460-0059 (online)*
- Thornburg J, Polosa R, Hecht SS, Gillman GI, Farsalinos EK. *Books Analytical Assesment of E-cigarettes*. 1 ed. Morissey K, editor. Amsterdam: 2016; 60.
- Pane JP, Simorangkir L, Saragih PISB. Faktor-Faktor Risiko Penyakit Kardivaskular Berbasis Masyarakat. *Jurnal Penelitian Perawat Profesional*. 2022;4(4).
- Beklen A, Yildirim BG, Mimaroglu M, Yavuz MB. The impact of smoking on oral health and patient assessment of tobacco cessation support from Turkish dentists. *Tob Induc Dis*. 2021 Jun 10;19:49. doi: 10.18332/tid/136418. eCollection 2021.
- Arini, Agung AG, Sumerti, Arta AA. Hubungan Merokok dengan Kebersihan Gigi dan Mulut pada Remaja di Banjar Tunjuk Tengah Tabanan Tahun 2019. *Jurnal Kesehatan Gigi (Dental Health Journal)*. 2023 Feb Vol.10 (1);42-50
- Sukarsih S, Silfia A, Muliadi M. Perilaku dan keterampilan menyikat gigi terhadap timbulnya karies gigi pada anak di Kota Jambi. *Jurnal Kesehatan Gigi*. 2019; 6(2): 80–86.
- Fajriyah RL, MunawarohS., Rizkyana SA., MudawamahS., FebianaTD., Marisa S., Anggraini SD. Peningkatan Perilaku Kebersihan Gigi dan Mulut Melalui Edukasi Kesehatan pada Kelompok Anak Usia Sekolah dan Remaja. *Jurnal Abdimas Indonesia*, 2025. Vol 7(1): 80-88
- Pedwell, R. K., Hardy, J. A., & Rowland, S. L. Effective visual design and communication practices for research posters: Exemplars based on the theory and practice of multimedia learning and rhetoric. *Biochemistry and Molecular Biology Education*, 2017.45(3), 249–261
- Linus, C., & Bassey, C. L. ASSESSMENT OF GRAPHIC POSTER DESIGN AND ENVIRONMENTAL SUSTAINABILITY IN AKWA IBOM STATE. *GASPRO INTERNATIONAL JOURNAL OF EMINENT SCHOLARS*, 2025. 12, 26591057.
- Pakpahan, M., Siregar, D., Susilawaty, A., Mustar, T., Ramdany, R., Manurung, E. I, .Maisyarah. (2021). *Promosi Kesehatan & Perilaku Kesehatan*. Yayasan Kita Menulis.
- Susilo FS., Aripin D., Suwargiani AA. Practices of oral health maintenance, caries protective factors and caries experience in adults 1Department of Conservative Dentistry . *Padjadjaran Journal of Dentistry*. 2021; 33(2): 170-180