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The Effectiveness of Interactive Demonstration in Improving Tooth Brushing Techniques School-Aged Children

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Abstract

Incorrect tooth brushing techniques in school-aged children can lead to dental and oral problems, such as tooth decay, cavities, and dental caries. One approach used to improve good tooth brushing habits is through demonstrations. Interactive demonstrations are an effective method to enhance school children's understanding, helping them develop the correct knowledge and habits for proper tooth brushing. This study aimed to analyze the effectiveness of interactive demonstrations in improving proper tooth-brushing techniques among school-aged children at SD YBPK Kediri. The design of the study was a pre-experiment with a one-group pre-test and post-test design. The population consisted of 32 fourth and fifth-grade students at SD YBPK Kediri. The inclusion criteria for the study were children aged 7–12 years, those who attended school during data collection, and those willing to participate in the study. A total sampling technique was applied for the study. The data were analyzed using the Wilcoxon test. Before the interactive demonstration, the children's tooth brushing behavior was suboptimal, with 22 respondents (68.8%) demonstrating inadequate brushing techniques. There was a significant improvement in tooth brushing techniques after the interactive demonstration, with a significance value of 0.000 ($p < 0.05$). The interactive demonstration was found to be highly effective in improving tooth-brushing behavior among school-aged children at Sekolah Dasar Yayasan Badan Pendidikan Kristen (SD YBPK) Kediri. Interactive demonstrations enhancing dental health and preventing oral problems to children's.

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INTRODUCTION

Brushing teeth regularly plays an important role in maintaining dental and oral health in children, especially school-aged children (Ayal et al., 2024). This behavior is an essential component of promotive and preventive efforts in public health, considering the high prevalence of dental problems among school-aged children globally (Rindiani Kurnia et al., 2024). This activity aims to clean all surfaces of the teeth from food remnants using a toothbrush and toothpaste (Heny Noor Wijayanti, 2023). However, the effectiveness of tooth-brushing practices greatly depends on proper technique and consistency, not merely on frequency (Tobing et al., 2026). Incorrect brushing habits can cause problems and affect the quality and productivity of an individual, particularly school-aged children (Sumadewi & Harkitasari, 2023). This indicates that improper oral health behaviors may have long-term impacts on children's quality of life, including nutritional status and overall development (Gurav et al., 2022). Dental and oral problems arise because many school-aged children still struggle to apply proper tooth-brushing techniques (Umairahmah & Indah Prasetya, 2024). In addition, the lack of supervision and continuous education contributes to the low level of children's skills in maintaining oral hygiene (Junaidi et al., 2023). The school-age period is an ideal time to teach and train children about the importance of brushing their teeth, as permanent teeth that emerge during this stage require proper oral hygiene and regular attention to potential dental issues (Wilis & Rosalin, 2025). Furthermore, the school years are an appropriate period for behavior and health training (Irfan; Mohamad et al., 2024). Interventions at this stage have been proven effective in shaping long-term health behaviors through structured and continuous educational approaches (Al-Sharani et al., 2025). Several dental and oral issues can arise due to a lack of proper oral hygiene (Larasati et al., 2022).

In 2013, the World Health Organization (WHO) reported that the prevalence of dental caries reached 80–95% among children under the age of 12. It is estimated that approximately 90% of school-aged children worldwide have experienced dental caries. Both Asia and America continue to face significant challenges related to dental caries. This indicates that dental caries remains a global public health problem requiring serious attention through continuous promotive and preventive efforts (Ratna et al., 2024). The Basic Health Research (Irfan; Mohamad et al., 2024) reported that the prevalence of dental and oral health problems in Indonesia reached 57.6%, with only 10.2% receiving treatment from health professionals, and merely 2.8% practicing proper tooth brushing. This finding indicates a low level of awareness and appropriate behavior in maintaining oral and dental health (Min et al., 2024a). In East Java, the prevalence of dental and oral health problems reaches 56%. In terms of tooth-brushing behavior, there has been an increase in the proportion of children aged over 3 years who brush their teeth daily, from 93.85% in 2013 to 95% in 2018. However, the proportion of children practicing correct tooth-brushing techniques has slightly decreased, from 2.3% to 2%. This phenomenon indicates a gap between knowledge and proper practice in maintaining oral hygiene (Erchick et al., 2020). Based on a preliminary study conducted at Sekolah Dasar Yayasan Badan Pendidikan Kristen (SD YBPK) Kediri, nearly 50% of children do not brush their teeth properly. On average, children brush their teeth only once a day. This condition highlights the need for more effective and practical health education interventions to improve children's tooth-brushing skills (Cahyani & Marliana, 2025).

Teeth and the mouth are essential parts of the body that need to be kept clean, as various germs can enter through these organs (Rahmi et al., 2023). In general, oral hygiene is crucial for a person's health and well-being, as it affects functions such as chewing, speaking, and self-confidence (Gunawan et al., 2026). One of the ways to clean the teeth and mouth is by brushing teeth properly (Rahmi et al., 2023). Proper tooth brushing is important in dental care, as it helps remove dirt and plaque that accumulate on the tooth surfaces (Astarani et al., 2023). The buildup of dirt on the teeth can lead to dental damage, causing the teeth to become weak,

develop cavities, and result in tooth decay (Napitupulu, 2023). The impact of dental caries on school-aged children can hinder their developmental process, including their intellectual growth. In addition, dental caries can be chronic in nature and may develop over a long period of time, leading to a high potential for lifelong health problems among affected individuals (Rindiani Kurnia et al., 2024). If this issue persists, it may affect the child's overall quality of life (Irfan; Mohamad et al., 2024).

Proper tooth-brushing techniques can have a significant impact on dental and oral health (Sumadewi & Harkitasari, 2023). In addition, appropriate tooth-brushing habits established from an early age have been shown to reduce the risk of dental caries and periodontal diseases among school-aged children (Kementerian Kesehatan RI, 2022). Tooth-brushing skills should be taught and emphasized to children of all ages, particularly school-aged children, as they are at a developmental stage where they can easily absorb and internalize fundamental values (Siregar & Batubara, 2021). In line with this, the school-age period is a critical phase for shaping health behaviors, as children begin to understand instructions and imitate demonstrated practices (Uribe et al., 2021). One effective way to improve children's skills is through health education using interactive demonstration methods, which can be delivered to school-aged children (Mutia et al., 2022). Educational approaches that involve active participation have been proven to be more effective than passive lecture methods in enhancing understanding and practical skills (Hasrini et al., 2023). The demonstration method is a way of presenting ideas or knowledge that is carefully prepared to show how a particular action or procedure is performed (Nasrah & Mardelita, 2024). Wardani (2011) in (Nasrah & Mardelita, 2024) stated that the demonstration method is more effective in improving children's knowledge of proper tooth-brushing techniques. Therefore, the use of demonstration methods not only increases knowledge but also helps children internalize skills through direct experience (Sudiartana; I Made et al., 2024). Health education for school-aged children should be delivered using demonstration methods to ensure that the information is easily understood and retained (Nasrah & Mardelita, 2024). This is important because appropriate learning media significantly influence the success of behavioral change in children (Tavakoli et al., 2025). Children should practice brushing their teeth independently, as they should not rely on others for assistance in the future (Widyastomo et al., 2025). Based on the issues outlined and research findings regarding the importance of health education in promoting proper tooth-brushing behavior among children, the researcher is interested in conducting a study entitled: *"The Effectiveness of Interactive Demonstration in Improving Proper Tooth-Brushing Techniques Among School-Aged Children at SD YBPK Kediri."*

METHODS

The research design used a pre-experimental design with a one-group pre-test post-test method. The population for this study consisted of 32 students from SD YBPK Kediri. The school-aged children who met the inclusion criteria were 32 in total, selected using a total sampling technique. The inclusion criteria for this study was children aged 7–12 years, those who attended school on the data collection day, and those who were willing to participate in the study. The health education in this study utilized an interactive demonstration media, which included 12 steps for proper tooth brushing. Data collection was performed using a tooth brushing checklist. The respondents were asked to demonstrate tooth brushing both before and after the interactive demonstration. The correct tooth brushing steps were based on the guidelines from the Indonesian Ministry of Health (Kementerian Kesehatan RI, 2020). Scoring was as follows: a score of 0 (zero) was given if the respondent did not perform the action, a score of 1 (one) if the action was performed but incorrectly, and a score of 2 (two) if the action was performed correctly. Respondents were considered to have good skills if their score ranged from 17 to 24, fair skills if their score ranged from 9 to 16, and poor skills if their

score ranged from 0 to 8. The data analysis used in this study was the Wilcoxon test. This research was conducted from January 23 to February 23, 2023, and has passed the Health Research Ethics Commission (KEPK) stage at STIKES RS Baptis Kediri 106/19/I/EC/KEPK-3/STIKES RSBK/2023.

RESULT

Table 1. Frequency Distribution of Respondent's Characteristics

No	Characteristics	Frequency	%
1	**Gender**		
	Male	16	50,0
	Female	16	50,0
	TOTAL	**32**	**100**
2	**Age**		
	9 – 10 years	22	68,8
	11 – 12 years	10	31,2
	TOTAL	**32**	**100**
3	**Grade**		
	Class 5	16	50,0
	Class 6	16	50,0
	TOTAL	**32**	**100**

Based on the respondents' characteristics, the gender distribution was equal, with 16 males (50.0%) and 16 females (50.0%). In terms of age, the majority of respondents were 9–10 years old, totaling 22 children (68.8%), while 10 children (31.2%) were aged 11–12 years. Based on grade level, the distribution was also equal, with 16 students (50.0%) in Grade 5 and 16 students (50.0%) in Grade 6. Overall, the total number of respondents in this study was 32 students (100%).

Table 2. Category Brushing Teeth Behavior

No	Brushing Teeth Behavior	Frequency		%	
		Before	After	Before	After
1	Insufficient	22	1	68,8	3,1
2	Satisfactory	9	5	28,1	15,6
3	Good	1	26	3,1	81,3
	Total	**32**	**32**	**100%**	**100%**
Statistical test		*Wilcoxon Signed Rank Test.* p = 0,000. Z= -4,932			

Based on the table above, it shows behavior before an insufficient of 68%. 3.1% had the good Brushing teeth behavior category. Based on the table above, it shows behavior after an insufficient is 3.1%. The good brushing teeth behavior category 81,3%.

Table 3. Wilcoxon Statistical Test of Teeth Brushing Behavior

Brushing Teeth Behavior	*Ranks*	*Wilcoxon Signed Rank Test*		
		N	Mean Rank	*Sum Of Ranks*
Brushing Teeth Behavior Before –	*Negative Rank*	0	0,00	0,00
Brushing Teeth Behavior After	*Positive Rank*	30	15,50	465,00
	Ties	2		
TOTAL		32		

	Statistics Test
	Brushing Teeth Behavior Before – Brushing Teeth Behavior After
Z	--4,932
Asymp. Sig. (2-tailed)	.000

The Wilcoxon test showed that 30 respondents experienced an increase, no decrease, and 2 remained the same. Z value = -4.932 with p = 0.000 (p < 0.05), so there is a significant difference before and after the intervention; effective intervention to improve toothbrushing behavior

DISCUSSION

Tooth Brushing Behavior

In this study, the results showed that 22 respondents (68.8%) had poor tooth-brushing behavior, 9 respondents (28.1%) had adequate behavior, and only 1 respondent (3.1%) demonstrated good behavior. These findings indicate that the majority of school-aged children still exhibit suboptimal tooth-brushing behavior, which may increase the risk of developing oral health problems (Min et al., 2024a).

The ability to brush teeth properly is an important factor in maintaining oral health. Brushing teeth is a simple action that helps remove plaque and food remnants using a toothbrush and toothpaste, as plaque and food residues are the main causes of dental caries (Putri Arum et al., 2023). Brushing teeth is the process of cleaning teeth from food remnants, bacteria, and plaque (Quinn & Harding, 2025). However, the effectiveness of tooth brushing is highly influenced by the technique, duration, and consistency performed by individuals (Adynur et al., 2023). Tooth cleaning should consider the appropriate timing, the correct tools, and the proper technique, all performed consistently (Wardani et al., 2024).

Brushing teeth at least twice a day, at the right times—after breakfast in the morning and before bed at night—along with avoiding sticky and sweet foods, can significantly influence the occurrence of dental caries (Uribe et al., 2021). In addition, good oral health behavior needs to be established early in life so that it becomes a long-term habit carried into adulthood (Lam & Duangthip, 2025). Efforts to maintain oral health should begin at an early age. The elementary school period is an ideal time to develop a child's motor skills, including the ability to brush teeth (Ripana et al., 2024). At this stage, children are capable of learning through imitation and repeated practice, making educational interventions highly effective (Tavakoli et al., 2025). The ability to brush teeth properly is an important factor in maintaining good oral health (Lam & Duangthip, 2025). Based on the research findings, 22 respondents (68.8%) exhibited poor behavior. These results are consistent with a study by (Quinn & Harding, 2025) which found that 62.1% of respondents had improper tooth-brushing habits. This similarity suggests that improper tooth-brushing behavior remains a recurring issue among school-aged children in various settings (Min et al., 2024a). The researchers found that the respondents' brushing practices did not follow correct procedures. Most respondents brushed their teeth using a horizontal back-and-forth motion. Additionally, they did not brush the inner surfaces of the lower front teeth using the correct angled technique, relying only on a back-and-forth motion. They also neglected to clean their tongue and the roof of the mouth properly. Furthermore, most respondents did not use circular motions when brushing the posterior teeth, resulting in incomplete cleaning of tooth surfaces. This condition indicates that children have not yet fully understood proper tooth-brushing techniques, highlighting the need for more practical and easily understood educational methods (Wardani et al., 2024). The researcher concluded that the observed behavior was repetitive and had become habitual. Improper tooth-brushing habits in school-aged children can have negative consequences for their oral health (Wardani et al., 2024). Habits formed at an early age tend to persist into adulthood if no appropriate intervention is

provided (Tavakoli et al., 2025). School-aged children often have busy routines, including school, extracurricular activities, playing with peers, and studying, which may lead them to neglect simple practices such as brushing their teeth correctly and at the appropriate time. In addition, environmental factors and lack of parental supervision also play a role in influencing children's health behaviors (A Gonie et al., 2025). Additionally, children aged 6 to 12 years begin to explore various types of food. If this is not balanced with proper tooth brushing, it can negatively affect their dental health (Fuadah et al., 2023)

Effectiveness of Interactive Demonstration

Based on the research results regarding the effectiveness of interactive demonstrations in improving proper tooth brushing techniques among school-aged children at SD YBPK Kediri, it was found that out of 32 respondents, following the intervention, 26 respondents (81.3%) exhibited good tooth brushing behavior, 5 respondents (15.6%) had adequate behavior, and 1 respondent (3.1%) demonstrated poor behavior. These findings indicate a significant improvement after the implementation of the interactive demonstration, suggesting that this method is effective in modifying children's behavior (Al-Sharani et al., 2025).

To provide a more detailed explanation, nearly all respondents—30 out of 32—showed improvement, with their behavior shifting from poor to good. Additionally, a small group of 2 respondents remained in the same category: one respondent initially exhibited good behavior and maintained it after the intervention, while another respondent continued to demonstrate poor behavior despite receiving the interactive demonstration. This phenomenon suggests that although most children showed improvement, individual factors such as motivation, prior habits, and environmental influences may affect the success of the intervention (Al-Sharani et al., 2025).

The statistical analysis showed a p-value of 0.000, which is less than 0.05. This result confirms that the interactive demonstration was effective in improving proper tooth brushing techniques among school-aged children. Statistically, this finding reinforces that demonstration-based interventions have a significant impact on health behavior change (Mariati et al., 2023). Dental and oral health problems are critical issues that must be addressed, particularly among school-aged children, as they can affect growth and development (Nasrah & Mardelita, 2024). These issues require appropriate educational approaches to ensure that children are able to understand and independently practice proper health behaviors (Khan et al., 2021). One of the main factors contributing to oral health problems in children is the lack of awareness regarding the importance of maintaining proper oral hygiene (Khan et al., 2021).

Teaching children motor skills, including proper tooth brushing habits, is an effective strategy to maintain oral health (Siregar & Batubara, 2021). In this context, learning methods that involve active participation are essential to enhance children's practical skills (Utami et al., 2024). One of the most effective methods for teaching children is through interactive demonstrations (Utami et al., 2024). Interactive demonstrations in oral health aim to directly show children the correct procedures for cleaning their teeth and mouth (Nurzamilah et al., 2020). This approach allows children to learn through direct experience, thereby improving understanding and retention (Quinn & Harding, 2025). This method can be implemented by presenting real-life situations, making it easier for children to understand and apply concepts, principles, and skills in their daily lives (Haloho et al., 2025). A significant improvement was observed after the interactive demonstration, with 26 respondents (81.3%) demonstrating good tooth brushing behavior. This improvement indicates that interactive demonstration methods can effectively bridge the gap between knowledge and practice (A Gonie et al., 2025).

According to the researcher, when respondents were shown the correct tooth brushing technique directly, they were able to follow the steps more clearly and practically. Additionally, the use of dental models during the demonstration allowed respondents to practice directly and actively engage

in the learning process. Active engagement is a key factor in successful learning, as children not only observe but also perform the behavior themselves (Larasati et al., 2022). The interactive method also provided immediate feedback on their brushing techniques. These findings are consistent with a study by (Ngatemi & Purnama, 2021), which found that education using demonstration methods is effective in improving children's tooth brushing skills and oral hygiene status. Maintaining oral hygiene is an essential aspect of health promotion, as it can prevent various oral diseases (Yildiz & Ataş, 2025). Therefore, interactive demonstration can be considered a primary strategy in promoting oral health among school-aged children (Khan et al., 2021). Through the interactive demonstration, school-aged children were motivated to maintain proper tooth brushing habits due to their positive learning experiences. They became familiar with appropriate toothbrushes and toothpaste and learned effective ways to care for their teeth and oral cavity. Engaging and interactive learning experiences have been shown to enhance children's motivation to sustain healthy behaveiors (Min et al., 2024a).

Most respondents in this study were aged 9–10 years (68.8%), which is considered an ideal stage for forming long-term healthy habits. At this developmental stage, children have the cognitive ability to understand instructions and independently apply learned skills (Quinn & Harding, 2025). The interactive demonstration was shown to improve children's knowledge and skills in maintaining oral health. This finding is consistent with the Precede-Proceed Model, which states that knowledge and attitudes are predisposing factors for behavior change (Sabilillah et al., 2025). This model explains that increased knowledge shapes attitudes, which in turn drive behavioral changes (Sabilillah et al., 2025). Once individuals receive information, they evaluate it, form attitudes, and eventually apply the behavior based on their beliefs and perceived benefits (Sabilillah et al., 2025).

CONCLUSION

Before the interactive demonstration, most of the school-age children at SD YBPK Kediri displayed poor tooth brushing behavior, with 22 respondents (68.8%) showing inadequate brushing habits. After the interactive demonstration, 26 respondents (81.3%) exhibited good tooth brushing behavior. The interactive demonstration proved to be highly effective in improving their tooth brushing technique, leading to a significant increase in their ability to brush their teeth correctly, with a p-value of $0.000 < 0.05$. These findings highlight the effectiveness of the interactive demonstration in teaching children how to brush their teeth properly. The demonstration actively involved the children, allowing them to practice the technique directly. The use of immediate feedback during the demonstration also contributed to improving their skills and understanding of good oral hygiene.

SUGGESTION

Through this research, it is hoped that it can contribute to increasing knowledge and providing information about the proper tooth brushing technique using interactive demonstration media. Additionally, the study aims to change the habits and motivation of school-aged children, enabling them to brush their teeth correctly and effectively. By adopting proper tooth brushing techniques, children will be able to minimize the negative impacts that can arise from incorrect oral hygiene habits, ultimately improving their dental health and overall well-being.

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CONFLICT OF INTEREST

In compiling research up to journal publication conducted by researchers, there are no "Conflicts of Interest". Everything went well because there was good cooperation between researchers and support providers, namely the STIKES RS. Kediri Baptist.

AUTHOR CONTRIBUTION

In this research the first author as a correspondence who responsible for the research process to publication by writing article that have been adjusted to journal guidelines. The second author assisted in the data collection. The third author assisted in the research process and data analysis, and assisted in the translation.

REFERENCE

A Gonie, L. T., S Wowor, V. N., & Wayan Mariati, N. (2025). *Effectiveness of Dental Health Education Using Demonstration Method on Increasing Knowledge about Tooth Brushing among Elementary School Students*. *13*(2), 266–271. https://doi.org/10.35790/eg.v13i2.57

Adynur, P. M. R., Prasetyowati, S., & Sarwo Edi, I. (2023). Pengetahuan Tentang Kesehatan Gigi dan Mulut Pada Siswa Kelas IV SDN Baratajaya Surabaya. *Surabaya Dental Therapist Journal*, *1*(2), 3025–4701. https://doi.org/10.36568/sdtj

Al-Sharani, H. M., Stormon, N., Al-Hutbany, N., Zhang, Y., & Zulfiqar, T. (2025). Optimal tooth brushing initiation age and frequency for preventing early childhood caries: a systematic review and meta-analysis. In *BMC Oral Health* (Vol. 25, Number 1). BioMed Central Ltd. https://doi.org/10.1186/s12903-025-07179-5

Astarani, K., Yentus, A., Regita, A., Henny, C., Nelli, D., Irawanda, D., Sanjaya, D. A., Dwiseptyani, E., & Anggara, F. (2023). Upaya Peningkatan Ketrampilan Gosok Gigi Pada Anak di SD YBPK Kediri. *Kontribusi: Jurnal Penelitian Dan Pengabdian Kepada Masyarakat*, *3*(2), 139–149. https://doi.org/10.53624/kontribusi.v3i2.198

Ayal, A. T. A., Fitri Anggraeni, & Dwi Ambarwati. (2024). IMPLEMENTASI PENDIDIKAN KESEHATAN ORAL HYGIENE TERHADAP PENCEGAHAN KARIES GIGI PADA ANAK USIA PRA SEKOLAH DI PAUD KUNTUM MEKAR. *Jurnal Manajemen Kesehatan Dan Keperawatan*, *1*(2). https://doi.org/10.35968/36b15x67

Cahyani, C., & Marliana, S. (2025). Tingkat Kesadaran Pemeliharaan Kesehatan Rongga Mulut pada Anak Sekolah Dasar. *E-GiGi*, *14*(1), 165–169. https://doi.org/10.35790/eg.v14i1.62345

Erchick, D. J., Agrawal, N. K., Khatry, S. K., Katz, J., LeClerq, S. C., Reynolds, M. A., & Mullany, L. C. (2020). Adherence to and acceptability of three alcohol-free, antiseptic oral rinses: A community-based pilot randomized controlled trial among pregnant women in rural Nepal. *Community Dentistry and Oral Epidemiology*, *48*(6), 501–512. https://doi.org/10.1111/cdoe.12562

Fuadah, N. T., Fransiska Helena, D., Tazkiyah, I., Studi, P., Keperawatan, S., Ners, D. P., &

Keperawatan, F. (2023). *DAMPAK MENGONSUMSI MAKANAN KARIOGENIK DAN PERILAKU MENGGOSOK GIGI TERHADAP KESEHATAN GIGI ANAK USIA SEKOLAH DASAR*. https://doi.org/10.37287/jppp.v5i2.1586

Gunawan, I., Nurmalasari, A., Widyastomo, J., Rifda, N., & Gunawan, E. (2026). EKSPLORASI PENINGKATAN PENGETAHUAN KEBERSIHAN MULUT ANAK USIA PRASEKOLAH MELALUI PROGRAM EDUKASI DI TK AL-MUNAWAROH KEDIRI. *Jurnal Ners*, *10*(1), 1431–1435. https://doi.org/10.31004/jn.v10i1.52973

Gurav, K. M., Shetty, V., Vinay, V., Bhor, K., Jain, C., & Divekar, P. (2022). Effectiveness of Oral Health Educational Methods among School Children Aged 5–16 Years in Improving their Oral Health Status: A Meta-analysis. *International Journal of Clinical Pediatric Dentistry*, *15*(3), 338–349. https://doi.org/10.5005/jp-journals-10005-2395

Haloho, D. N., Bintang, G. V., Widjaja, G. A., Sihombing, J. S., Abigayl, I., & Lesmana, D. (2025). Efektivitas Penyuluhan Menggunakan Video Animasi Mengenai Cara Menyikat Gigi dengan Benar pada Anak Sekolah Dasar. *E-GiGi*, *13*(2), 390–397. https://doi.org/10.35790/eg.v13i2.60233

Hasrini, Jauharuddin; Arfiah, Sartika; Dewi, Maritsa; Amirah, & Ahkam; Zahrawi Astrie. (2023). Program Penyuluhan Edukasi Perilaku Menggosok Gigi pada Anak Usia Sekolah di SD Pertiwi Makassar. *Jurnal Nusantara Berbakti*, *1*(1), 124–128. https://doi.org/10.59024/jnb.v1i1.419

Heny Noor Wijayanti. (2023). Edukasi Kesehatan Gigi dan Mulut dalam Upaya Meningkatkan Kesehatan Gigi pada Anak Sekolah Dasar. *Room of Civil Society Development*, *2*(4), 153–160. https://doi.org/10.59110/rcsd.201

Irfan; Mohamad, Rahman; Abdul, & Erlita Distriani Patade; Agnes. (2024). Hubungan Cara Menyikat Gigi Terhadap Pengetahuan Kesehatan Gigi Pada Anak Usia Sekolah Dasar Inpres 1 Tondo Kelurahan Tondo kecamatan Mantikulore. *Jurnal Kesehatan Ilmiah Indonesia*, *9*(2). https://doi.org/10.51933/health.v9i2.1639

Junaidi, Sri Gumilar, M., & Febrianti, S. (2023). *Dental Health Education and Improving Skill of Brushing Teeth Using Virtual Reality Applications for Early Childhood in Pondok Meja Village in 2023*. *8*(2). https://doi.org/10.25047/j-dinamika.v8i2.3936

Kementerian Kesehatan RI. (2020). *Panduan Cuci Tangan Pakai Sabun (CTPS)*. 1–34.

Kementerian Kesehatan RI. (2022). Rencana Strategis (Renstra) Kementerian Kesehatan 2022-2024. In *Kemenkes RI*. Kementrian Kesehatan Republik Indonesia.

Khan, I. M., Mani, S. A., Doss, J. G., Danaee, M., & Kong, L. Y. L. (2021). Pre-schoolers' tooth brushing behaviour and association with their oral health: a cross-sectional study. *BMC Oral Health*, *21*(1). https://doi.org/10.1186/s12903-021-01643-8

Lam, P. P. Y., & Duangthip, D. (2025). Editorial: Improving children's oral health. In *Frontiers in Oral Health* (Vol. 6). Frontiers Media SA. https://doi.org/10.3389/froh.2025.1636820

Larasati, R., Farida Wahyuni, D., Prasetyowati, S., Hadi, S., Keperawatan, J., Politeknik, G., Kementerian, K., & Surabaya, K. (2022). *SYSTEMATIC LITERATURE REVIEW: KNOWLEDGE AND BRUSHING BEHAVIOR IN ELEMENTARY SCHOOL AGE CHILDREN* (Vol. 4). https://doi.org/10.36086/jkgm.v4i1.823

Mariati, N. W., Wowor, V. N. S., & Tasya, M. (2023). Hubungan Tingkat Pengetahuan dengan Kejadian Karies Gigi pada Anak Usia Sekolah di Desa Wori. *E-GiGi*, *12*(2), 199–206. https://doi.org/10.35790/eg.v12i2.51333

Min, S. N., Duangthip, D., Gao, S. S., & Detsomboonrat, P. (2024). Early childhood caries and its associated factors among 5-

years-old Myanmar children. *Frontiers in Oral Health*, *5*. https://doi.org/10.3389/froh.2024.1278972

Mutia, N., Sabil, F. A., & Kadir, A. (2022). *Pengaruh Pemberian Edukasi Terkait Kejadian Karies Gigi Terhadap Pengetahuan Dan Peran Orang Tua Pada Anak*. *2*(2). https://doi.org/10.36059/jimpk.v2i2.724

Napitupulu, D. F. G. D. (2023). HUBUNGAN KEBIASAAN MENYIKAT GIGI DENGAN KARIES GIGI PADA ANAK USIA SEKOLAH. *Jurnal Keperawatan Priority*, *6*(1). https://doi.org/10.34012/jukep.v6i1.2948

Nasrah, & Mardelita, S. (2024). Efektivitas Penyuluhan Kesehatan Gigi dan Mulut dengan Metode Demonstrasi dan Simulasi terhadap Keterampilan Menyikat Gigi pada Siswa Sekolah Dasar. *Global: Jurnal Ilmiah Multidisiplin*, *1*(3), 73–79. https://doi.org/10.37985/global.v1i3.36

Ngatemi, & Purnama, T. (2021). *Counseling with Tooth Brushing Demonstration Method as an Effort to Improve Tooth Brushing Skills and the Status of Dental and Oral Hygiene in Early Childhood at School*. https://doi.org/10.37506/mlu.v21i1.2391

Nurzamilah, R., Megananda, R., Putri, H., Praptiwi, Y. H., Supriyanto, I., Keperawatan, J., Poltekkes, G., & Bandung, K. (2020). GAMBARAN KETERAMPILAN MENYIKAT GIGI PADA ANAK USIA 5 TAHUN. *Jurnal Kesehatan Siliwangi*, *1*(1). https://doi.org/10.34011/jks.v1i1.607

Putri Arum, Y., Yulia Maritasari, D., & Antoro, B. (2023). FAKTOR-FAKTOR YANG BERHUBUNGAN DENGAN KEJADIAN KARIES GIGI PADA REMAJA DI KLINIK GIGI CHEESE BANDAR LAMPUNG TAHUN 2022. *Dental Health Journal*, *10*(1). https://doi.org/10.33992/jkg.v7i1

Quinn, P., & Harding, M. (2025). Tooth brushing learning methods: time to change practice? In *Evidence-Based Dentistry* (Vol. 26, Number 3, pp. 135–136). Springer Nature. https://doi.org/10.1038/s41432-025-01175-y

Rahmi, S. A., Juni Mulia, R., Sara, F., Rahman, W. A., & Kesehatan Banjarmasin, P. (2023). Penggunaan Media Yang Efektif Dalam Promosi Kesehatan Gigi Dan Mulut Pada Anak Sekolah Dasar. *JIKES : JURNAL ILMU KESEHATAN Tahun 2023*, *1*(2), 203–209. https://doi.org/10.71456/jik.v1i2.278

Ratna, M., Wulandari, K., Keperawatan, S., Bina, S., Bali, U., & Artikel, R. (2024). The Effect of Animation Media Combination with Demonstration Learning on Brush Teeth Ability Pre School Children at Widya Kusuma Sari Kindergarten. *Jurnal Aliansi Keperawatan Indonesia*, *1*(1). https://doi.org/10.55887/jaki.v1i1.3

Rindiani Kurnia, Weslei Daeli, & Yeni Kyoto. (2024). Hubungan Perilaku Kesehatan Menggosok Gigi dengan Karies Gigi pada Anak Usia Sekolah di SDN Karangsari Cianjur Tahun 2022. *Protein : Jurnal Ilmu Keperawatan Dan Kebidanan.* , *2*(1), 163–168. https://doi.org/10.61132/protein.v2i1.128

Ripana, N., Widyagdo, A., & Daniati, N. (2024). HUBUNGAN PENGETAHUAN DAN PERILAKU MENYIKAT GIGI DENGAN KEBERSIHAN GIGI DAN MULUT PADA ANAK KELAS 3 SEKOLAH DASAR NEGERI 2 WALED KOTA KABUPATEN CIREBON. *Jurnal Ilmiah Keperawatan Gigi (JIKG)*, *5*(2). https://doi.org/10.37160/jikg.v5i2.548

Sabilillah, M. F., Kusnanto, H., Hanindriyo, L., & Kuswandari, S. (2025). Effect of oral health education model on tooth brushing behavior and oral hygiene among children with intellectual disabilities. *Brazilian Dental Science*, *28*(1). https://doi.org/10.4322/bds.2025.e4653

Siregar, R. A., & Batubara, N. S. (2021). Penyuluhan PHBS dan Demonstrasi Cara Cuci Tangan dan Sikat Gigi yang Benar di Desa Simatohir Kecamatan Padangsidimpuan Angkola Julu. *Jurnal Pengabdian Masyarakat Aufa (JPMA)*, *3*. https://doi.org/10.51933/jpma.v3i1.342

Sudiartana; I Made, Suparsa, I. N., Putri, N. M. A. V., & Tari, N. K. W. (2024). PENTINGNYA MENJAGA KESEHATAN GIGI MELALUI DEMONSTRASI CARA MENYIKAT GIGI YANG BAIK DAN BENAR DI TIGA PAUD. *Jurnal Abdi Dharma Masyarakat (JADMA)*, *5*(2), 108–120. https://doi.org/10.36733/jadma.v5i2.10267

Sumadewi, K. T., & Harkitasari, S. (2023). Edukasi Kesehatan Gigi dan Mulut serta Cara Menggosok Gigi pada Anak Sekolah Dasar di Banjar Bukian, Desa Pelaga. *Journal WMMJ Warmadewa Minesterium Medical Journal*, *2*(1), 1–7.

Tavakoli, S., Saadatfar, N., & Tiyuri, A. (2025). The effectiveness of school-based supervised tooth brushing intervention for preventing dental caries: a systematic review and meta-analysis. In *BMC Oral Health* (Vol. 25, Number 1). BioMed Central Ltd. https://doi.org/10.1186/s12903-025-07299-y

Tobing, M., Indah, I., Wati, A., Divina, P. Y., & Gunawan, E. (2026). EFEKTIVITAS PROGRAM EDUKASI DALAM MENINGKATKAN PERILAKU KESEHATAN GIGI DAN MULUT ANAK USIA PRASEKOLAH DI TK AL-JAWAHIR KEDIRI. *JURNAL NERS*, *10*, 1393–1397. https://doi.org/10.31004/jn.v10i1.53046

Umairahmah, N., & Indah Prasetya, F. (2024). ANALISIS FAKTOR YANG MEMENGARUHI PERILAKU MENGGOSOK GIGI PADA ANAK: LITERATUR REVIEW. *Jurnal Kesehatan Gigi Dan Mulut (JKGM)*, *6*(2), 2024–2746. https://doi.org/10.36086/jkgm.v6i2.2566

Uribe, S. E., Innes, N., & Maldupa, I. (2021). The global prevalence of early childhood caries: A systematic review with meta-analysis using the WHO diagnostic criteria. In *International Journal of Paediatric Dentistry* (Vol. 31, Number 6, pp. 817–830). John Wiley and Sons Inc. https://doi.org/10.1111/ipd.12783

Utami, S. P., Mahata, I. B. E., Ningrum, V., Amran, R., & Wiyanti, R. (2024). Relationship between Tooth Brushing Behavior and Dental Caries in Children at 27 Sungai Sapih Public Elementary School Kuranji, Padang City. *E-GiGi*, *12*(2), 162–167. https://doi.org/10.35790/eg.v12i

Wardani, I. K., Dewi, R. K., Adhani, R., & Garcia, A. (2024). Toothbrushing Behavior and The Incidence of Dental Caries In Children. *Jurnal Berita Ilmu Keperawatan*, *17*(2), 196–201. https://doi.org/10.23917/bik.v17i2.4502

Widyastomo, J., Indriyasari, A., Tobing, M., & Gunawan, I. (2025). Optimalisasi Kebersihan Gigi dan Mulut pada Kegiatan Penyuluhan Interaktif di PG & TK ABA VI. *Journal of Community Development | E-ISSN*, (6), 977–987. https://doi.org/10.47134/comdev.v6i2.1

Wilis, R., & Rosalin. (2025). Hubungan Perilaku Menggosok Gigi Dengan Kebersihan Gigi Dan Mulut Pada Anak Usia Sekolah Dasar Di SD Negeri 16 Bay Pass Gampong Cot Bau Kota Sabang. *Poltekkes Kemenkes Aceh*, *19*(1), 48–56. https://doi.org/10.30867/nasuwakes.v18i1.768

Yildiz, Ş., & Ataş, O. (2025). In vitro evaluation of the effectiveness of pediatric drugs and tooth brushing on the surface roughness of different restorative dental materials used in pedodontics. *Dental Journal*, *58*(2), 120–127. https://doi.org/10.20473/j.djmkg.v58.i2.p120-12