

Effectiveness of the Siger-U Pocket Book (Seru Toothbrush) in Improving Toothbrushing Skills Among Kindergarten Children

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ABSTRACT

Introduction: Dental and oral health problems in preschool-aged children still occur frequently, one of which is caused by poor teeth brushing skills. Preschool-aged children are not yet able to maintain oral hygiene independently, so they are at risk of experiencing dental caries. Promotive and preventive efforts are needed through health education using media that suits the characteristics of children. The Siger-U Pocket Book (Fun Toothbrush) is a dental health education medium that is prepared in a simple, visual and interesting way to help children understand and practice the correct way to brush their teeth.

Objective: This study aims to determine the effect of using the Siger-U Pocket Book (Fun Toothbrush) on improving toothbrushing skills in Citra Melati Kedaton Kindergarten children in Bandar Lampung.

Method: This research uses quantitative methods with a pre-experimental design using a one group pretest, posttest design. The research was carried out from 13 December 2025 to 05 January 2026 at Citra Melati Kindergarten in Bandar Lampung. The research population was all 38 Citra Melati Kindergarten children, with a sample of 38 children using a total sampling technique. The research instrument is a toothbrushing skill observation sheet with eight assessment steps. Data analysis was carried out using the Wilcoxon Signed Rank Test after carrying out the Shapiro Wilk normality test with a significance level of 5%.

Result The results of the study showed that there was an increase in children's tooth brushing skills after being given the Siger-U Pocket Book intervention. The Wilcoxon test results show a p-value of 0.000 ($p \leq 0.05$), which means that there is a significant effect of using the Siger-U Pocket Book on improving teeth brushing skills.

Conclusion: The conclusion of this research is that the Siger-U Pocket Book has a significant effect on improving the toothbrushing skills of preschool children. It is recommended that the Siger-U Pocket Book be used as a medium for dental health education in kindergartens and in dental and oral health promotion activities.

Keywords: pocket book, preschool, toothbrush skills

Introduction

According to 2022 data from the World Health Organization (WHO), worldwide, 60-90% of school-age children and 100% of adults suffer from tooth decay. The prevalence of dental problems increases with age. The incidence of caries in permanent teeth is 20% in children aged 6 and 60% by age 8. Meanwhile, the 2018 Basic Health Research (Riskesmas) found that 57.6% of the Indonesian population suffers from tooth and mouth decay, and only 10.2% receive dental health services. Furthermore, 93% of young children suffer from cavities. The incidence of dental caries is 92.6% in children aged 5-9 and 73.4% in children aged 10-14 (Wijayanti, 2023).

Based on data from the 2023 Indonesian Health Survey (SKI), approximately 88% of the 56.9% of the Indonesian population experiencing dental and oral problems suffer from caries or cavities, particularly among children. This figure indicates a very high prevalence of dental caries in Indonesia, with most people not brushing their teeth properly, allowing caries to develop easily (Ministry of Health, 2025).

According to data on dental and oral health services in Lampung Province in 2024, five districts had the highest number of dental cases. Bandar Lampung recorded 47,005 cases, South Lampung recorded 30,391, East Lampung 21,242, Pringsewu 19,569, and Central Lampung 10,594 (Lampung Province Health Profile, 2025).

Based on information on oral and dental health services by community health centers (Puskesmas) and sub-districts in Bandar Lampung City in 2021, three community health centers had the highest number of dental cases. Kedaton Community Health Center recorded the highest number of dental cases, with 511 cases. Kampung Sawah Community Health Center followed in second place with 315 dental cases. Gedong Air Community Health Center followed in third place with 251 dental cases (Bandar Lampung City Government Health Office, 2021).

The most common dental and oral health problems at Kedaton Community Health Center in 2021 were diseases of the pulp and supporting tissues of the teeth (pulpitis and pulp necrosis), which are generally caused by untreated cavities. This situation highlights the importance of increasing promotive and preventive efforts, such as education on proper toothbrushing techniques, fluoride use (used to strengthen the hard outer layer and protect the crown of the tooth), cavity prevention and support, and regular dental checkups, especially for children, to prevent worsening dental problems later in life. The Kedaton Community Health Center conducts health checks, including dental checkups, every 6 months at every kindergarten in Kedaton. One example is data from 24 children at Citra Melati Kindergarten who had dental problems there (Kedaton Inpatient Health Center, 2023). Common dental and oral problems in children include caries, swollen gums, canker sores, crooked teeth, and bleeding gums. Cavities, or tooth decay, are the most common problem (Unair, 2022).

Dental and oral diseases include: Dental caries, which is the damage to tooth tissue that forms cavities, characterized by white spots on the tooth surface, which over time develop into cavities. Plaque is a thin, colorless layer that adheres to the tooth surface and consists of fine food debris, adhesives, and germs. Gingivitis is a gum disease that causes swelling of the gums around the necks of teeth, characterized by a redder color than usual and easy bleeding caused by germs and plaque. Gingivitis is exacerbated by tartar buildup. Other gum conditions include root puncture wounds in baby teeth (in children), and swelling (pus-filled lumps) caused by infection from decayed teeth. Tartar forms from plaque that hardens over time due

to mineralization into tartar. This tartar is what causes gum inflammation (Dr.drg. Cut Aja Nuraskin, 2021).

Researchers conducted a pre-survey on Friday, October 3, 2025, at four kindergartens. Interviews with teachers at each kindergarten revealed data on children suffering from dental caries. At Tunas Melati Kindergarten, there were 36 children across three grades, with 15 experiencing dental caries. At Citra Melati Kindergarten, there were 38 children across three grades, with 24 experiencing dental caries. At Kusuma Kindergarten, there were 57 children, with approximately 17 experiencing dental caries. At Aisyiyah Palapa 4 Preschool, there were only nine children, of whom five had dental caries.

Based on the pre-survey data, the researchers found that children at Citra Melati Kindergarten had a higher prevalence of dental problems, and they still lacked understanding of proper toothbrushing techniques. Children's toothbrushing skills were lacking, with children not brushing their teeth thoroughly. Children enjoy eating anything, including sweet foods, which can lead to tooth decay and complaints of toothache and discomfort in their teeth and mouths. Based on pre-survey data from 38 children, more than 20 still have cavities and still don't understand how to brush their teeth properly. Efforts at Citra Melati Kindergarten have been made to provide education through lectures/basic education only. Citra Melati Kindergarten has never received a pocketbook intervention due to the lack of a school dental health program (UKGS) at the preschool level and the lack of educational media specifically designed for Citra Melati Kindergarten children.

Based on the above description, the researchers were interested in analyzing the effect of using the Siger-U (fun toothbrush) pocketbook on improving tooth brushing skills in Citra Melati Kindergarten children at Bandar Lampung.

Objective

This study aims to determine the effect of using the Siger-U Pocket Book (Fun Toothbrush) on improving toothbrushing skills in Citra Melati Kedaton Kindergarten children in Bandar Lampung.

Method

The research method is a scientific method implemented rationally, empirically, and systematically to obtain valid data to answer research problems (Sugiyono, 2024). This research is a quantitative study with a pre-experimental design that applies a one-group pretest-posttest approach. This design aims to determine the effect of the Siger-u Pocket Book (Fun Toothbrush) on improving toothbrushing skills in Citra Melati Kindergarten children in Bandar Lampung. In this design, measurements were taken before and after the intervention was administered to the same group without a control group.

This research uses quantitative methods with a pre-experimental design using a one group pretest–posttest design. The research was carried out from 13 December 2025 to 05 January 2026 at Citra Melati Kindergarten in Bandar Lampung. The research population was all 38 Citra Melati Kindergarten children, with a sample of 38 children using a total sampling technique. The research instrument is a toothbrushing skill observation sheet with eight assessment steps. Data analysis was carried out using the Wilcoxon Signed Rank Test after carrying out the Shapiro–Wilk normality test with a significance level of 5%.

Results

Table 1. Frequency distribution of respondents' characteristics

Gender	Frequency (n)	Presentage (%)
Male	13	34.2 %
Female	25	65.8 %
Age		
4 Years old	1	2.6%
5 Years old	32	84.2%
6 Years old	5	13.2%
Total	38	100.0%

Of the total 38 respondents at Citra Melati Kindergarten, it appears that the majority of respondents were female, namely 25 children (65.8%), while the rest were male, namely 13 children (34.2%). This indicates that the composition of respondents in this study was dominated by girls. It is known that the age characteristics of respondents at Citra Melati Kindergarten consist of three age groups. Most of the respondents were 5 years old, namely 32 children (84.2%). Meanwhile, respondents aged 6 years numbered 5 children (13.2%), and only 1 child (2.6%) was 4 years old.

Table 2. Toothbrushing Skill Level before being given the Siger-U Pocket Book (fun toothbrush)

Toothbrushing Skill Level	N	Mean	Minimum	Maximum	Standard Deviation
Before Being Given the Siger-U Pocket Book	38	3.68	3	4	0.471

Based on Table above the toothbrushing skill level of 38 children at Citra Melati Kindergarten before being given the Siger-U Pocket Book (Fun Toothbrush) had a mean score of 3.68, with a minimum score of 3, a maximum score of 4, and a standard deviation of 0.460.

Table 3. Toothbrushing skill level of Citra Melati Kindergarten children after being given the Siger-U Pocket Book (fun toothbrush).

Toothbrushing Skill Level	N	Mean	Minimum	Maximum	Standard Deviation
After being given the Siger-U Pocket Book	38	7.84	7	8	0.370

Based on Table above the toothbrushing skill level of 38 children at Citra Melati Kindergarten after being given the Siger-U Pocket Book (fun toothbrush) intervention showed an average (mean) score of 7.84 out of a maximum score of 8, with a minimum score of 7, a maximum score of 8, and a standard deviation of 0.370.

Table 4. The Effect of the Siger-U Pocket Book (Fun Toothbrush) on Improving Toothbrushing Skills in Citra Melati Kindergarten, Kedaton, Bandar Lampung.

Toothbrushing Skill Level	N	Mean	Difference	Min-max	Standard Deviation	Z	p-Value
Before	38	3.74	4.1	3-6	6.01	-5.809	0.000
After	38	7.84		7-8	3.70		

Table above shows that the Wilcoxon test results above show a mean pretest score of 3.74 and a posttest score of 7.84, with a mean difference of 4.1. The Z value is -5.809, and the p-value is 0.000 ($p \leq 0.05$), indicating a significant difference between the pretest and posttest scores. So H_0 is rejected and H_a is accepted, it can be concluded that there is an influence of the Siger-U Pocket Book (Fun Toothbrush) on efforts to improve toothbrushing skills in Citra Melati Kedaton Kindergarten children in Bandar Lampung.

Discussion

These results reflect that most children were able to correctly and completely brush their teeth according to the steps recommended in the Siger-U Pocket Book. The children were not only able to follow the sequence of brushing techniques but also demonstrated consistent practice, from holding the toothbrush correctly, brushing all tooth surfaces, and adjusting the duration according to the given guidelines. The low standard deviation indicates that skill improvement occurred evenly across all respondents, not just in a select few.

These results align with research by Ayunda et al., 2025, which found that providing Dental Health Education (DHE) to preschool children significantly improved toothbrushing skills after the intervention compared to before. Education delivered through engaging and age-appropriate media has proven effective in improving children's ability to practice proper toothbrushing techniques. Furthermore, research by Restiningsih & Anggraeni, 2024, also showed that the use of dental health education books significantly improved children's toothbrushing skills. Pocket books facilitate children's understanding of the material through simple pictures and language, enabling them to better apply tooth-brushing skills after the intervention.

Another study by Salsabila et al., 2025, also supports this finding, stating that the use of activity-based educational media significantly improves children's toothbrushing techniques. Educational media that incorporates visuals and hands-on activities helps children more easily understand and remember the correct steps for brushing. Therefore, the post-intervention study results indicate that the Siger-U Pocket Book (Fun Toothbrush) is effective in improving toothbrushing skills in Citra Melati Kindergarten children. Educational media that is tailored to the characteristics of early childhood can optimally enhance understanding and practice of toothbrushing, potentially fostering oral hygiene habits from an early age.

After the Siger-U Pocket Book (Fun Toothbrush) intervention, the study results showed an improvement in children's toothbrushing skills. Children demonstrated improved ability to perform toothbrushing steps according to the observation sheet used. These results align with previous research that suggests that dental health education media can help improve children's skills. Researchers assume that the increase in these skills occurred after children received dental health education through the Siger-U Pocket Book.

The analysis using the Wilcoxon Signed Rank Test showed a p-value of 0.000 ($p \leq 0.05$), indicating a significant effect of using the Siger-U Pocket Book on improving children's

toothbrushing skills. This finding aligns with research by Agata & Subardiah (2025), which found that the use of dental health education media significantly improved children's toothbrushing skills. Furthermore, research by Arnetty et al. (2025) also suggests that preventing dental health problems in children through appropriate health education can improve children's knowledge and skills in dental and oral health. Education delivered in an engaging, age-appropriate manner is easier for children to understand and practice.

The researchers assume that the difference in toothbrushing skills before and after the intervention is a result of the Siger-U Pocket Book, a dental health education medium designed to be simple, engaging, and tailored to the characteristics of preschool children. This media helps children understand the correct stages of toothbrushing, resulting in improved skills after the intervention. Thus, the results of this study are supported by previous research which states that dental health education has an influence in improving children's dental health skills.

Conclusion

Respondents at Citra Melati Kindergarten were predominantly girls (65.8%), and most were 5 years old (84.2%), the typical age range for kindergarten children. This composition reflects adequate cognitive and fine motor development readiness to participate in self-care skills learning, including tooth brushing.

Prior to the intervention, children's tooth brushing skills were in the moderate category (mean = 3.68 out of a maximum score of 4), indicating that children understood the basics of tooth brushing technique but had not yet mastered all aspects optimally, thus requiring a more effective learning approach.

Following the provision of the Siger-U Pocket Book, children's tooth brushing skills significantly improved to the very good category (mean = 7.84 out of a maximum score of 8), with consistent mastery of almost all indicators, demonstrating the effectiveness of this media in supporting dental health learning. 4. The results of the statistical test using the Wilcoxon Signed Ranks Test showed a significant effect ($p = 0.000 \leq 0.05$) of the Siger-U Pocket Book intervention on improving children's tooth brushing skills, so it can be concluded that this media has proven effective as an educational tool in improving dental and oral care skills in early childhood. The results showed that Structured Diabetic Foot Exercises significantly improved ABI values with a significance value of <0.002 . The ABI value improved by $1.67 + 0.802$ to $1.10 + 0.305$.

The results showed that Structured Diabetic Foot Exercises significantly improved foot sensitivity values with a significance value of <0.001 . The foot sensitivity value improved by $1.67 + 0.497$ to $1.30 + 0.466$.

Conflict of Interest

No declare.

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Ethical consideration

No declare.

Authors' contribution

Each author contributed equally in all the parts of the research. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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