

The 4th International Conference of Dental and Oral Health (ICoDOH)

**Differences in Maintenance of Dental and Mouth Cleanliness Before and After Using
Sigibel Pop Up Box Media**

Ishraf Muhammad Husni Abdillah^{1*}, Sunomo Hadi², Siti Fitria Ulfah³, Nur Hasanah⁴
Department of Dental Health, Poltekkes Kemenkes Surabaya, Indonesia
**Corresponding author: ishrafhusni@gmail.com*

ABSTRACT

Problems: The problem in this research is the high percentage of debris index scores in class IV students at Sidosermo 1 State Elementary School, Wonocolo District, Surabaya **Objective:** The aim of this research was to determine the difference in maintaining oral hygiene before and after using the Sigibel Pop-Up Box media. **Methods:** The data collection method used is a questionnaire sheet. This type of research is Quasi Experiment with a target number of 54 students by filling in pretest and posttest questionnaires. The data analysis technique is to carry out tests using the SPSS data processing application with the Wilcoxon test. **Results:** The results of this study can be concluded that there is a difference in the maintenance of dental and oral hygiene before and after counseling using the Sigibel Pop-Up Box media with the average knowledge about maintenance of students before counseling using the Sigibel Pop-Up Box media is less and the average knowledge about maintenance students after counseling using the Sigibel Pop-Up Box media is good.

Keywords: Maintaining Dental and Oral Hygiene, Sigibel Pop-Up Box Media, Elementary School Students

INTRODUCTION

Dental and oral hygiene and poor food consumption patterns can result in dental and oral health problems. One of the causes of dental and oral health problems that often occur in society is the behavioral factor or attitude of ignoring dental and oral hygiene (Aqidatunisa et al., 2022).

According to data from the Indonesian Ministry of Health from the results of basic health research RISKESDAS in 2018, it is clear that elementary school children who experience debris problems have a bad index of 57.6%. Based on initial examination data carried out on class IV students at SDN Sidosermo Surabaya, a total of 10 students, the average Debris Score was 1.97 with a percentage of 70% of students having a bad index, 20% having a medium index, 10% having a good index. . This shows that the average Debris Index score for class IV students at SDN Sidosermo Surabaya is

poor (Kemenkes RI, 2018).

Based on the 2021 Surabaya Health profile data report, Sidosermo Community Health Center is one of the community health centers in Wonocolo sub-district. Data on dental and oral health services for elementary school/level children obtained from the Surabaya Health profile data shows that the Sidosermo health center has carried out examinations in all elementary schools with a percentage of 100%. After the examination, the data showed that of the 597 elementary school students supported by the Sidosermo Community Health Center, there were 367 students who needed treatment. This shows that not all elementary school students receive dental and oral health care based on a small percentage (Dinkes Kota Surabaya, 2021).

Debris is a soft deposit found on the surface of the teeth that comes from food that is liquefied by bacterial enzymes and will clear 5-30 minutes after eating (Ika,

2021). Debris forms due to food residue that is not removed immediately. Debris can be removed by saliva and oral muscle movements when chewing. Apart from that, this debris can be removed using other steps, including gargling, flossing, brushing your tongue, chewing gum, not consuming foods that contain sucrose, and increasing your consumption of fibrous fruit and vegetables (Novriani & Zainur, 2020).

If this debris is allowed to accumulate and worsen, it will trigger various oral problems such as dental caries, tartar, bad breath, gum inflammation and other serious oral infections. Debris cannot be seen directly so compounds are needed to help see the debris (Erwin et al., 2021).

Septianti & Afiani (2020) say that elementary school students are divided into two groups: low class students are in classes 1, 2, and 3, and high class students are in classes 4, 5, and 6. Upper elementary schools are characterized by children can think logically, is very realistic, has curiosity and is willing to learn, is interested in the content of learning and tries to complete the task himself. At the age of grade 4, mixed dentition also occurs, which is a time when two types of teeth alternate, namely milk teeth and permanent teeth. At this age a child should have 20 teeth, but in reality there are still many children at that age who have damaged teeth. Therefore, at this age, children must be given knowledge about maintaining dental and oral hygiene in order to prevent dental and oral health problems from emerging teeth.

One effort to increase dental and oral hygiene rates is by promoting dental and oral health. Promotion of dental and oral health to the public requires providing information about dental and oral health and hygiene using various media. Edgar Dale's cone theory explains that the bottom layer of the cone is real objects and the top layer is words. This means that in the educational process, real objects have the highest intensity in explaining the teaching

material. Meanwhile, the delivery of educational material that only uses words is very ineffective or has low intensity (Nubaton & Ayatullah, 2019).

Current technological developments show that in conveying information related to knowledge, it is necessary to use media to help convey information more effectively and efficiently. The media used can also be aligned with the material to be conveyed as well as the target age of the counseling. Success in providing information about dental health to children depends on learning methods and the important role of media in assisting the learning process so that students more easily understand what is being conveyed. Thanks to the media, the messages conveyed become more interesting and easier to understand (Husna & Prasko, 2019).

One effective learning media for developing children's skills is using pop-up media. Pop-up media is a book sheet that has moving parts or has 3-dimensional elements. This pop-up media tends to make paper mechanics that can make images look more different in terms of perspective/dimensions, changes in shape and can move. The Sigibel Pop-Up Box media is a combination of Explosion Box media and a portable toothbrush in one box. This Explosion Box media already existed before, but researchers modified this media by adding a Portable Toothbrush in one box. Students' motor skills will also be better supported using this media because the function of Sigibel (Portable Toothbrush) is that children can practice their knowledge directly after using the Sigibel Pop-Up Box media (Husna & Prasko, 2019).

RESEARCH METHOD

The type of research used is Quasi Experiment. The Quasi Experiment used in this research is Quasi Experiment: One-Group Pretest-Posttest which is a Quasi Experiment where a group is measured and observed before and after treatment.

This form of experiment has an initial test (pretest) before being given treatment, and a final test (posttest) will be given after the treatment. This method can also provide known treatment results, because it can be compared with the conditions before treatment and after treatment (William & Hita, 2019) . This experimental model goes through 3 steps, namely:

1. Provide a pretest to measure the dependent variable (students' maintenance of dental and oral hygiene) before being given treatment.
2. Providing research subject classes using Sigibel Pop-Up Box media
3. Provide a post test to measure the dependent variable after being given treatment

The data collection method used is by using a questionnaire with the data collection instrument used is a questionnaire sheet. After the data is collected, data processing is carried out to prove the hypothesis by testing it using the SPSS data processing application. The data analysis used was the Wilcoxon test.

RESULT AND DISCUSSION

Table 1. Distribution based on Age and Gender of Class IV Students at SDN Sidosermo 1, Wonocolo District, Surabaya in 2024

Charasteristic Variables	N	%	
Age	9 years	3	5,56
	10 years	5	9,26
	11 years	46	85,18
Gender	Male	34	62,96
	Female	20	37,04

This research was carried out in February 2024 on fourth grade students at SDN Sidosermo 1 who were given treatment using the Sigibel Pop-Up Box media regarding maintaining oral hygiene. This study aims to determine the difference in maintaining oral hygiene before and after using the Sigibel Pop-Up Box media. Based on the table above, the research target is dominated by students aged 11 years, namely 46 people and dominated by males,

namely 34 people.

Table 2. Distribution of Results of Maintaining Dental and Oral Hygiene Before Using Sigibel Pop Up Box Media among Class IV Students at SDN Sidosermo 1, Wonocolo Districs, Surabaya in 2024

Category	Frequency	%
Good	1	1,85
Satisfactory	15	27,78
Poor	38	70,37
Total	54	100
Average		50,9

Based on table 2, it is known that the respondents' answers, namely class IV students at SDN Sidosermo 1, regarding maintaining dental and oral hygiene before using the Sigibel Pop-Up Box media, the average result was 50.9 in the poor category

Table 3. Distribution of of Results of Maintaining Dental and Oral Hygiene Before Using Sigibel Pop Up Box Media among Class IV Students at SDN Sidosermo 1, Wonocolo Districs, Surabaya in 2024

Category	Frequency	%
Poor	0	0
Satisfactory	6	11,11
Good	48	88,89
Total	54	100
Average		82,4

Based on table 3, it is known that the respondents' answers, namely class IV students at SDN Sidosermo 1 regarding maintaining oral and dental hygiene after using the Sigibel Pop-Up Box media, obtained an average result of 82.4 in the good category.

Table 4. Wilcoxon Test Results Before and After Using Sigibel Pop Up Box Media on Class IV Students at SDN Sidosermo 1, Wonocolo Districs, Surabaya in 2024

Variabel	Category			Asym p Sig
	Good	Satisfactory	Poor	
Before	1	15	36	0,00

Interventi on After	48	6	0
Interventi on			

Based on table 4, it is known that the Asymp Sig (2-tailed) value is $0.000 < 0.05$, so H1 is accepted and H0 is rejected, meaning that there is a difference in maintaining oral hygiene before and after counseling using the Sigibel Pop-Up Box media. This is shown by the results of the student score categories before the counseling was carried out using the Sigibel Pop-Up Box media, there was 1 student who had the Good category, whereas after the intervention was carried out using the Sigibel Pop-Up Box media there were 48 students who had the Good category.

This study aims to determine the differences in maintaining oral hygiene before and after using Sigibel Pop-Up Box media in class IV students at SDN Sidosermo 1, Wonocolo District, Surabaya. Based on the results of the data collection that has been carried out, several things can be explained as follows :

Maintaining Class IV Students at SDN Sidosermo Wonocolo Surabaya regarding Dental and Oral Hygiene Before Using Sigibel Pop-Up Box Media.

Based on the research results, it was found that maintaining oral hygiene for class IV students at SDN Sidosermo Wonocolo Surabaya before being given counseling using the Sigibel Pop-Up Box media showed that the average results for maintaining dental and oral hygiene for students were in the poor category. Based on the results in the field, many students' knowledge about how to brush their teeth is still inaccurate. Students still don't understand how to brush their teeth properly and correctly according to the stages. Apart from that, students also still don't understand the correct frequency of brushing their teeth, so they cannot apply the correct brushing time when brushing their teeth. This is due to the lack of

information obtained by students about maintaining oral hygiene as a promotive and preventive effort. Rehena *et al.* (2020) in their research explained that children use the wrong habits of brushing their teeth, the frequency of brushing their teeth, and when they brush their teeth.

Promotive and preventive efforts can indeed be carried out by the child himself, but these efforts can be carried out and will be more optimal if there are several other supporting factors, one of which is the parents. Banowati *et al.* (2021) in their research explains that the role of parents is very important in maintaining oral hygiene, because parents are the closest people to children, especially in maintaining healthy teeth and mouth.

Apart from the role of parents, children's habits can also influence the maintenance of oral hygiene. According to Rekawati & Frisca (2020), in their research, they explain that there are wrong habits that often occur in school-aged children, such as the habit of consuming excessive amounts of cariogenic foods, for example candy, chocolate, milk, biscuits and so on. These cariogenic foods usually have a sweet, sticky taste and stick easily to the surface of the teeth which can cause poor dental and oral hygiene conditions. In this case, there are many ways that can be done to minimize the number of lack of knowledge that can be applied to school age children, especially to class IV students at SDN Sidosermo 1 Wonocolo Surabaya, namely the need to make health efforts, one of which is by increasing promotive and preventive efforts to prevent dental hygiene problems and mouth by providing education about maintaining oral and dental hygiene from an early age (Banowati *et al.*, 2021).

Maintaining Class IV Students at SDN Sidosermo Wonocolo Surabaya regarding Dental and Oral Hygiene Before Using Sigibel Pop-Up Box Media.

In accordance with the results of data analysis which shows that there is an increase in the maintenance of dental and

oral hygiene after using the Sigibel Pop-Up Box media. The increase in dental and oral hygiene maintenance after using the Sigibel Pop-Up Box media was caused by several factors and based on the results in the field, the most influential factor was the choice of media because students were interested in using the Sigibel Pop-Up Box education media.

In conducting health education, the media has a big influence on students' knowledge because with health education carried out using media, students will be more interested in receiving the material and the knowledge provided can be conveyed well. Of course, the media provided should not be monotonous / only in the form of material, but practice should also be given afterwards so that they can apply the knowledge they have gained directly (Ester Meifa Glori *et al.*, 2024).

Media has various types and different methods of delivery and also has layers that will also influence the knowledge gained. This is in accordance with Edgar Dale's cone theory which explains that the bottom layer of the cone is the real object and the top layer is the words. This means that in the educational process, real objects have the highest intensity in explaining the teaching material. Meanwhile, the delivery of educational material that only uses words is very ineffective or has low intensity (Nubatoni & Ayatullah, 2019).

According to L. Green, knowledge is influenced by health promotion which includes outreach media and outreach methods. One factor that influences knowledge is the presence of interesting media. In this research, the media used is Sigibel Pop-Up Box media. This is in line with research by Setyanigrum (2020) which explains that the Sigibel Pop-Up Box media is a three-dimensional teaching aid that can stimulate children's imagination and increase knowledge so that it can make it easier for children to understand the depiction of the shape of an object, enrich their vocabulary and increase children's understanding. . The Sigibel pop up box is

a box which, when opened, can present a 3-dimensional construction or appear in the form of a way to maintain dental health supported by a portable toothbrush for direct practice. If adapted to Edgar Dale's cone theory, the Sigibel Pop-Up Box is at the top layer so that the delivery of material is more effective.

Differences in the Maintenance of Class IV Students at SDN Sidosermo Wonocolo Surabaya regarding Dental and Oral Hygiene Before and After Using Sigibel Pop-Up Box Media

Based on the research results, the maintenance of dental and oral hygiene of class IV students at Sidosermo Wonocolo Elementary School before and after using the Sigibel Pop-Up Box media showed that there were differences in maintaining dental and oral hygiene before and after using the Sigibel Pop-Up Box media. The difference before and after counseling using Sigibel Pop-Up Box media is shown by the knowledge category before counseling using Sigibel Pop-Up Box media is poor and the knowledge category after counseling using Sigibel Pop-Up Box media is good.

This difference in maintaining dental and oral hygiene is caused by choosing the right media in providing education about maintaining dental and oral hygiene.

The Sigibel Pop-Up Box is a combination of two products, namely an explosion box and a portable toothbrush. Learning and playing media using an explosion box can increase knowledge and creativity which makes students more enthusiastic in participating in learning activities, especially the Sigibel Pop-Up Box media is also equipped with a portable toothbrush so this media will seem very interactive and not monotonous (Nia Daniati *et al.*, 2022).

Explosion box education media already existed before, but the researchers modified it by adding a portable toothbrush in it so that they could implement the knowledge about how to brush teeth directly after they received the material.

The researcher modified a set of toiletries into a set of toothbrushing tools to make it more practical to carry and effective in use as an educational medium. Because one bottle of this portable toothbrush is equipped with toothpaste, a sand timer, and a way to brush your teeth, so students can apply and use this portable toothbrush easily.

Even though this media has been considered to have many advantages, this media also has disadvantages which are also felt by researchers. The advantage of this media is that it has a game component that can be used as a forum for introducing dental health concepts to students so that it can be used as a creative and innovative knowledge medium. The disadvantage of this media is that the manufacturing process requires thought and creativity so that the media looks attractive to elementary school students. The S-O-R theory in Notoatmodjo (2018) states that behavior is a response to stimulation. Behavior can emerge through a reaction process using the Sigibel Pop-Up Box media. If the Sigibel Pop-Up Box media can interact with elementary school students who have good quality, it will influence the behavior of elementary school students in maintaining oral hygiene.

CONCLUSION AND RECOMMENDATION

Based on the results of research and discussion regarding the differences in maintaining dental and oral hygiene before and after using Sigibel Pop-Up Box media in class IV students at SDN Sidoserma 1, Wonocolo District, Surabaya, it can be concluded that maintenance of dental and oral hygiene for class IV students at SDN Sidoserma 1, Wonocolo District, Surabaya before counseling conducted using the Sigibel Pop-Up Box media showed an average in the poor category. Maintaining oral hygiene for class IV students at SDN Sidoserma 1, Wonocolo District, Surabaya after counseling using Sigibel Pop-Up Box media showed an average in the good category. And after conducting counseling,

it can be concluded that there are differences in maintaining oral hygiene before and after counseling using the Sigibel Pop-Up Box media.

According to the results and discussion of the research that has been carried out, there are several suggestions that can be given. For respondents, namely Class IV students at SDN Sidoserma, a lot of knowledge and application regarding maintaining dental and oral hygiene in everyday life is needed so that optimal hygiene maintenance results are obtained. SDN Sidoserma 1 Surabaya can utilize Sigible Pop-Up Box media by involving this media in the student learning process so that the knowledge students gain regarding maintaining oral hygiene is not easily forgotten and can always be applied by students.

It is hoped that the research that has been carried out can become a reference for researchers who are interested in conducting research regarding the differences in maintaining oral hygiene both before and after using the Sigibel Pop-Up Box media. This research can be developed by developing the Sigibel Pop-Up Box media, developing it using other health promotion media, and can also be developed with other independent variables that can increase students' knowledge. Health promotion using outreach media in the form of the Sigibel Pop-Up Box has proven to be an effective medium for increasing knowledge.

REFERENCES

- Aqidatunisa, H. A., Hidayati, S., & Ulfah, S. F. 2022. Hubungan Pola Menyikat Gigi Dengan Kebersihan Gigi Dan Mulut Pada Anak Sekolah Dasar. *Jurnal Skala Kesehatan*, 13(2), 105–112.
<https://doi.org/10.31964/jsk.v13i2.366>
- Banowati, L., Supriatin, & Apriadi, P. 2021. Pengaruh pendidikan kesehatan terhadap peran orang tua dalam menjaga kesehatan gigi dan

- mulut siswa kelas i. *Jurnal Kesehatan*, 12(1), 17–25.
- Dinkes Kota Surabaya. 2021. Profil Kesehatan Surabaya 2020. *Dinas Kesehatan Kota Surabaya*, 49–58.
- Erwin, E., Asmawati, A., & Sofyan, S. 2021. Perbedaan Indeks Plak pada Pemeriksaan dengan Bahan Disclosing Solution dan Biji Kesumba (*Bixa orellana*). *Jurnal Surya Medika*, 6(2), 5–9. <https://doi.org/10.33084/jsm.v6i2.1535>
- Ester Meifa Glori, S., Apriza, & Widawati. 2024. Pengaruh Penyuluhan Kesehatan Menggunakan Media Leaflet Tentang Gastritis Di Sman 1 Perhentian Raja Tahun 2023. *Jurnal Kesehatan Terpadu*, 3(1), 63–71.
- Husna, N., & Prasko, P. 2019. Efektivitas Penyuluhan Kesehatan Gigi Dengan Menggunakan Media Busy Book Terhadap Tingkat Pengetahuan Kesehatan Gigi Dan Mulut. *Jurnal Kesehatan Gigi*, 6(1), 51. <https://doi.org/10.31983/jkg.v6i1.4408>
- Ika, I. 2021. Perbedaan Indeks Debris Antara Mengunyah Mentimun Dengan Tomat Pada Mahasiswa Keperawatan Gigi Bukittinggi. *Jurnal Menara Medika*, 3(2), 208–214.
- Kemkes RI. 2018. Hasil Riset Kesehatan Dasar Tahun 2018. *Kementrian Kesehatan RI*, 53(9), 1689–1699.
- Nia Daniati, Mutia Hendaningrum, & Aan Kusmana. 2022. Dental Explosion Box 3D on Knowledge of Dental and Oral Health Student'S. *The Incisor (Indonesian Journal of Care's in Oral Health)*, 6(2), 303–313. <https://doi.org/10.37160/theincisor.v6i2.30>
- Notoatmodjo, S. 2018. *Promosi Kesehatan Teori dan Aplikasi* (S. Notoatmodjo (ed.); 3rd ed.). PT RINEKA CIPTA.
- Novriani, A., & Zainur, Z. 2020. Efektivitas Mengonsumsi Buah Pepaya Dan Buah Semangka Dalam Penurunan Skor Debris. *Jurnal Kesehatan Gigi Dan Mulut (JKGM)*, 2(2), 27–31.
- Nubatoni, M., & Ayatullah, M. 2019. Jurnal Kesehatan Gigi. *Jurnal Kesehatan Gigi*, 6(2), 45–50.
- Rehena, Z., Kalay, M., & Ivakdalam, L. M. 2020. Hubungan Pengetahuan dan Kebiasaan Menggosok Gigi dengan Kejadian Karies Gigi pada Siswa SD Negeri 5 Waai Kabupaten Maluku Tengah. *Jurnal Biosainstek*, 2(2), 1–5. <https://doi.org/10.52046/biosainstek.v2i2.467>
- Rekawati, A., & Frisca, F. 2020. Hubungan kebiasaan konsumsi makanan kariogenik terhadap prevalensi karies gigi pada anak SD Negeri 3 Fajar Mataram. *Tarumanagara Medical Journal*, 2(2), 205–210. <https://doi.org/10.24912/tmj.v3i1.9719>
- Septianti, N., & Afiani, R. 2020. Pentingnya Memahami Karakteristik Siswa Sekolah Dasar di SDN Cikokol 2. *Jurnal Pendidikan Islam Anak Usia Dini*, 2(1), 7–17. <https://doi.org/10.36088/assabiqun.v2i1.611>
- Setiyanigrum, R. 2020. Media Pop-Up Book sebagai Media Pembelajaran Pascapandemi. *Prosiding Seminar Nasional Pascasarjana UNNES, 2016*, 217–219.
- William, & Hita. 2019. Mengukur Tingkat Pemahaman Pelatihan PowerPoint. *Jurnal SIFO Mikroskil*, 20(1), 71–80.