



# Dental and oral health e-book on knowledge of debris index for elementary school students

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## ABSTRACT

**Background:** Based on information from Basic Health Research in 2013, around 28.9% of children aged 5-9 years and 25.2% of children aged 10-14 years experienced dental and oral health problems. Especially in childhood, dental caries is a problem that must be avoided, especially when they attend elementary school. Therefore, it is important for us to provide knowledge about how important it is to maintain healthy teeth in children. It is hoped that the educational program can increase public awareness about the importance of maintaining dental and oral health and motivate them to actively maintain their own dental and oral health. Providing e-books about dental and oral health as a learning tool is one innovative way to change children's behavior in maintaining dental and oral health. **Objective:** To analyze the effectiveness of dental health e-books on knowledge and debris index in elementary school students. **Method:** This research uses a quasi experimental research design. This research was conducted on class V students of SDN Krukut 03 Limo Depok. The number of samples used was 54 people using purposive sampling technique. Data collection was carried out by direct examination and filling out a questionnaire sheet. Data were analyzed using the paired sample t-test. **Results:** Of the 54 samples, the average debris index score before counseling was 1.59, medium criteria and after counseling the average debris index was 0.95, medium criteria with the results of paired sample t-test  $p < 0.001$ . There is a difference in the average knowledge score, namely from the previous 75.85, sufficient criteria to 88.52, good criteria, with the results of paired sample t-test  $p < 0.001$ . **Conclusion:** Dental and oral health e-books are effective in increasing knowledge and reducing debris index scores in elementary school students.

## INTRODUCTION

Dental and oral health cannot be separated from overall physical health because it has an impact that affects the body as a whole (Lossu et al., 2015). Many people do not realize the importance of maintaining oral hygiene, which is often ignored, as the main cause of dental and oral disease (Purnama et al., 2022).

The results of the 2018 Basic Health Research show that 20 provinces have higher levels of dental and oral health problems than the national figure. The incidence rate of dental and oral health problems doubled from 25.9% in 2013 to 57.6% in 2018, and in the West Java region there is a slightly higher incidence rate than the national level, reaching 58%. Based on information from Basic Health Research in 2013, around 28.9% of children aged 5-9 years and 25.2% of children aged 10-14 years experienced dental and oral health problems (Riskesdas, 2018). Especially in childhood, dental caries is a problem that must be avoided, especially when they attend elementary school. Therefore, it is important for us to provide knowledge about how important it is to maintain dental health in children (Emini et al., 2023; Erdiyani et al., 2023).

Understanding dental and oral health is very important to encourage actions aimed at maintaining the cleanliness and health of teeth and mouth. Adequate understanding influences healthy actions, while lack of understanding causes dental and oral health problems in society (RE et al., 2021). Apart from that, attitudes that do not care about dental and oral hygiene are also the cause of dental and oral health problems in society (Purnama, 2023).

Maintaining oral and dental hygiene aims to prevent the buildup of bacteria and food residue on the teeth. This means that the teeth and oral cavity remain clean from plaque and other dirt, such as tartar, debris and food remain, and do not emit unpleasant breath odor (Novita et al., 2016). A person's dental and

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oral health can be measured based on how clean their mouth and teeth are. The mouth is classified as clean if there is no plaque, calculus, and food debris (Sherlyta et al., 2017).

Debris is food residue that sticks to the surface of the teeth and is one of the trigger factors for ongoing dental health problems. Leftover food left between the teeth and gums after eating that is not cleaned immediately is called debris (Nurjannah et al., 2012). Cleaning your teeth properly can help remove this debris. The ideal time to clean your teeth is every morning after breakfast and every evening before bed. If debris is not cleaned, it can cause tartar formation, tooth decay, and bad breath (Purnama et al., 2020).

Knowledge about dental and oral health refers to an individual's ability to understand all aspects related to dental and oral health, increase public awareness about the importance of dental and oral health, and provide an understanding of how to maintain healthy teeth and mouth. Dental and oral health education includes all efforts or activities aimed at encouraging individuals to be able to maintain optimal dental and oral health (Gayatri & Ariwinanti, 2016).

Dental and oral health education in early childhood is very important to reduce dental and oral health problems (Kasihani et al., 2022). It is hoped that the educational program can increase public awareness about the importance of maintaining dental and oral health and motivate them to actively maintain their own dental and oral health. Strategies and methods are needed that can encourage knowledge, attitudes and actions that support efforts to maintain oral health (Kristianto et al., 2022a).

In the rapid development of e-learning technology, books are needed that can be accessed via the internet and read using devices such as computers or other tools known as e-books. Because it is electronic, this book is known as an e-book or digital book. E-books are a type of technology that utilizes computers to present multimedia information dynamically and briefly (Muna et al., 2021).

E-books which are also known as digital books or electronic books, are a development of printed books which are generally read in everyday life (Prabowo & Heriyanto, 2013). Different from conventional books, electronic books contain information in digital form which includes text and images (Subiyantoro, 2014). Providing Android about dental and oral health as a learning tool is one innovative way to change children's behavior in maintaining healthy teeth and mouth.

In research (Kristianto et al., 2022a), fifth grade elementary school students in Jakarta showed improvements in their dental and oral hygiene as a result of the instruction provided through the use of the Maintaining Dental Health e-book operated via Android and tooth brushing demonstrations. From this research, it can be concluded that in the group that received E-book intervention at the first and fourth examinations, there was a significant difference between the Debris Index numbers from 2.03 to 1.23.

## **METHOD**

This research uses a quasi-experimental method in its research design. The definition of quasi-experiment. This design includes a control group that has limitations in controlling external variables that can influence the overall implementation of the experiment (Sugiyono, 2013). In this study, data was obtained based on direct examination using a status card and filling out a questionnaire which aims to effectiveness of dental health e-books on knowledge and debris index in elementary school students.

The sampling method used in this research was purposive sampling. Purposive sampling technique is a method where researchers select and take samples based on special considerations. Inclusion criteria: Registered as a class V student at SDN Krukut 03; Willing to be a respondent; Respondents were present during the pretest and posttest.

This study uses primary data obtained from intraoral examination using dental examination instruments. and collecting data on target knowledge using a questionnaire sheet. The data used is primary data, which was collected directly from class V students at SDN Krukut 03. This research was carried out by measuring the debris index image collected through direct dental examination, as well as filling out a questionnaire, on the target using a diagnostic tool set, then recorded in the status card and questionnaire sheet. To measure the level of dental and oral health knowledge in fifth grade students, 25 questions were given in the form of a questionnaire before and after counseling with e-books. The results of the questionnaire were obtained from 54 class V students at SDN Krukut 03. Data analysis used in this study used the SPSS program with paired sample t tests. The data collection stages carried out by researchers are as follows:

1. Provide informed consent.
2. At the first meeting, the fifth grade students at SDN Krukut 03 were given a pre-test with the aim of measuring their knowledge about dental and oral health, using a questionnaire and after that a debris index examination was carried out which was checked according to attendance. The examination uses a diagnostic tool set which is then recorded on the status debris index card sheet.

3. After that, the researcher then collected data in the form of telephone numbers of class V students to be included in the WhatsApp group which would later be given a learning link in the form of an e-book. Then intervention was carried out for 5 days in the form of independent learning using e-books
4. Within 5 days, class V students at SDN Krukut 03 were always reminded in the WhatsApp group to read e-books every day.
5. Meeting the two researchers gave a post-test in the form of the same questions that had been given during the pre-test and then a debris index was checked which was checked according to attendance. The examination used a diagnostic tool set which was then recorded on the debris index status card sheet for class V students at SDN Krukut 03. The aim was to determine whether their knowledge about dental and oral health had increased, as well as a decrease in the debris index after being given counseling.
6. Researchers carried out a recapitulation of knowledge data and debris index before and after being given counseling with e-books.

## RESULT

**Table 1.** Frequency distribution of knowledge level before and after counseling with dental and oral health e-books

Knowledge	Before		After	
	F	%	F	%
Good	37	68.5	54	100
Moderate	14	25.9	0	0
Enough	3	5.6	0	0
Total	54	100	54	100

Based on the data listed in Table 1, it can be observed that before the counseling was carried out, out of a total of 54 samples, there were 37 people (68.5%) who were in the good knowledge category, 14 people (25.9%) in the sufficient knowledge category, and 3 people (5.6%) were in the Enough of knowledge category. After counseling with e-books was carried out, all 54-sample people (100%) were in the good knowledge category, none were in the sufficient knowledge or poor knowledge category.

**Table 2.** Frequency distribution of debris index criteria before and after counseling with dental and oral health e-books

Debris Criteria	Before		After	
	F	%	F	%
Good	1	2	16	30
Moderate	33	61	34	63
Enough	20	37	4	7
Total	54	100	54	100

Based on table 2, it can be seen that from a sample of 54 people there are 1 person (2%) who is included in the good criteria, 33 people (61%) are included in the moderate criteria, and 20 people (37%) are included in the enough criteria, after being given counseling with e-books there are 16 people (30%) who are included in the good criteria, 34 people (63%) are included in the moderate criteria, and 4 people (7%) are included in the enough criteria.

**Table 3.** Different test of knowledge and debris index before and after counseling with dental and oral health e-books

Variable		Mean	p-value
Knowledge	Pre-test	75.85	0.001
	Pos-test	88.52	
Debris index	Pre-test	1.59	0.001
	Pos-test	0.95	

Table 3 shows that the results of the paired sample test analysis obtained knowledge and debris indeks p-value of 0.001 ( $p < 0.05$ ), meaning that dental and oral health e-books are effective in increasing knowledge and reducing debris index scores in elementary school students.

## DISCUSSION

Oral health education includes all efforts or activities that aim to encourage individuals to be able to maintain optimal oral health (Gayatri & Ariwinanti, 2016). Based on the results of research conducted on April 06, 2023, on 54 fifth grade students at SDN Krukut 03, it was found that before counseling there were 37 people (68.5%) with good knowledge criteria, 14 people (25.9%) with enough knowledge criteria, and 3 people (5.6%) with poor knowledge criteria. Furthermore, in a study conducted on April 10, 2023, it was found that after counseling using e-books, there were 54 people (100%) with good knowledge criteria, no people with sufficient knowledge criteria, and no people with poor knowledge criteria.

There was an increase in knowledge about oral health before and after counseling using e-books. In the criteria of good knowledge, the number increased from 37 people (68.5%) to 54 people (100%). While in the criteria of enough knowledge, the number decreased from 14 people (25.9%) to 0 people (0%). In addition, there were no more people who fell into the criteria of poor knowledge after counseling, previously there were 3 people (5.6%) in that category. This indicates a change in understanding from not knowing to knowing.

When compared to the findings of previous research conducted by (Putri Dwiastuti, 2022) in her research entitled "Increasing Oral Hygiene Level with Android-Based Healthy Food E-book, in 2021". In this study, it was found that the average value of group knowledge with android-based healthy food e-book intervention from 19.52 to 6.90. The results of research conducted by (Putri Dwiastuti, 2022) are in line with this study, because both found that counseling with oral health e-books increased knowledge about dental health.

This is due to the fact that elementary school students in Bali have proven that using an Android-based healthy food e-book is an innovative approach to improving their oral health. The use of Android-based healthy food e-books helps children and parents, especially mothers, monitor their children's oral health and provides health education that increases awareness of the importance of maintaining oral health. Thus, this e-book provides many advantages (Putri Dwiastuti, 2022)

According to (Adi, 2020), individual knowledge can be affected by various factors, such as internal factors involving psychological aspects. For example, factors such as intelligence, attitude, talent, interest, and motivation can affect a person's level of knowledge. If a student has a good or sufficient level of knowledge, it may be due to positive interests, attitudes, talents, and motivation in receiving information, so that they can gain a deep understanding.

A person's oral health can be measured based on how clean their mouth and teeth are. The mouth is classified as clean if there is no plaque, calculus, and food debris (Sherlyta et al., 2017). Based on research conducted on April 06, 2023, on grade V students of SDN Krukut 03, totaling 54 people, it was found that the overall debris index score before counseling with dental health e-books was 1 person (2%) who included good criteria, 33 people (61%) included moderate criteria, and 20 people (37%) included enough criteria, with an overall average of 1.59 (moderate criteria).

Whereas after counseling with e-books there were 16 people (30%) including good criteria, 34 people (63%) including moderate criteria, and 4 people (7%) including enough criteria, with an overall average debris of 0.95 (moderate criteria). There was a change in the debris index score before and after counseling with e-books, namely a decrease in the debris index score from 1.59 to 0.95 after counseling.

When compared with the findings of previous research conducted by (Kristianto et al., 2022b), in his research entitled "The Efficiency Model Of Mentoring Through E-book Keep Your Teeth & Oral Healthy, Based On Android To Improving The Degree Of Dental And Oral Hygiene And Knowledge In Student Of Elementary Class V Jakarta, In 2022", it is known that the debris index score dropped from 2.03 to 1.23. The results of research conducted by (Kristianto et al., 2022) are in line with this study because of the decrease in the respondent's debris index after being given counseling with an android-based dental health care e-book.

Based on research conducted by (Kristianto et al., 2022) it was concluded that the group that received the intervention using the Android-based Keeping Dental Health E-book showed a significant difference in the debris index between the first and fourth examinations. In addition, this study found that between the group that received the intervention and the group that did not receive the intervention, there was a significant increase in their knowledge. The results of these findings indicate that the intervention using the Android-based Keeping Dental Health E-book has a significant role in increasing the role of parents in maintaining oral hygiene.

## CONCLUSION

Based on the results of the research that has been done, it can be concluded that there is the dental and oral health e-books are effective in increasing knowledge and reducing debris index scores in elementary school students

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