



Education of Dental Health Maintenance Using Paint Application

Ngena Ria*¹, Susy Adrianelly Simaremare², Nelly Katharina Manurung³

Department of Dental Hygiene, Politeknik Kesehatan Kementerian Kesehatan, Medan, Indonesia

Abstract

BACKGROUND: Education of dental health maintenance is important for children, because the lack of knowledge of children in maintaining dental health will affect the development of dental health in adulthood. The success of education is influenced, among others, by the media or tools used.

AIM: This study aims to determine the effect of education using paint application media on the risk factors for caries.

METHODOLOGY: This type of research was a quasi-experimental design with pre-test and post-test designs. To find out changes in knowledge, a questionnaire was administered. The sample was elementary school students, aged 8–10 years, and the number of samples was 60 people. Data analysis using paired t-test.

RESULTS: This study showed that there was a significant effect on the average value obtained from students' knowledge before and after the intervention using the paint application. The results of this study can be used as a basis for the use of paint applications as a medium for education media of dental health maintenance.

CONCLUSION: Education using paint application media has increased students' knowledge. It was stated that education using paint applications had an effect on increasing students' knowledge in maintaining dental health. It is hoped that the use of the paint application media will be an alternative in the selection of dental health maintenance educational aids.

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***Correspondence:** Ngena Ria, Politeknik Kesehatan Kementerian Kesehatan Medan, Indonesia. E-mail: ngena_ria@yahoo.com
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Introduction

Oral and dental health can affect quality of life [1], [2], [3]. Quality of life related to dental and oral health is a multidimensional concept, namely, well-being in relation to dental function factors (chewing, swallowing, and speaking), psychological factors (personal appearance), social factors (social interaction, communication, and socialization), as well as factors associated with pain and discomfort [4].

The prevalence of dental and oral diseases, especially dental caries, is still high in school-age children [5], [6], [7]. Caries in children can cause pain that causes discomfort, eating disorders, premature tooth loss, and speech disorders so that it has a negative impact on children's quality of life [8], [9], [10], [11].

Based on the results of existing research, toothache experienced by schoolchildren can result in disruption of learning activities at school which has an impact on decreasing academic achievement and psychosocial problems [12], [13]. Elementary schoolchildren are more susceptible to dental caries because, in general, they really like sweet food and drinks [3], besides that children's awareness to always maintain dental and oral hygiene is still lacking [14], [15]. Considering this condition, it is necessary to provide education to elementary schoolchildren to increase

their knowledge in maintaining dental health as an effort to reduce risk factors for dental caries. In this study, education was carried out using paint application media which was more effective and interactive because it fostered attention, interest, and received direct feedback from children. Especially with the current state of the COVID-19 pandemic, online learning has also been carried out for elementary schoolchildren so that children are accustomed to using laptops as a learning medium.

Methods

This type of research was a quasi-experimental design with pre-test and post-test designs. The research was carried out at YPK Don Bosco Elementary School, Percut Sei Tuan. This type of research was a quasi-experimental design with pre-test and post-test designs.

The sample was elementary school students, aged 8–10 years. The number of samples was 60 people. Sample selection was simple random sampling.

Measurement and data collection

Data were collected by dividing the sample into two groups, namely, the case group (n = 30 people) and

the control group (n = 30 people). Data collection begun with distributing questionnaires to students to get initial data on knowledge about dental health maintenance (pre-test). Furthermore, in the case group, researchers conducted education on dental health maintenance using paint application media. Each child colored the pictures that have been provided in the paint application according to the group of pictures, namely, the introduction of healthy teeth and caries, foods that are healthy for teeth and not healthy for teeth, as well as the importance of brushing teeth and regular check-ups with the dentist. After completion of the intervention, the questionnaire was administered again (as a post-test).

Furthermore, direct dental health checks were carried out on students to obtain data on deft and DMF-T. Caries is a tooth defect which can be measured by caries prevalence and DMFT/defect index. The prevalence of caries is a value that reflects the number of caries sufferers in a given period and time. The def-t index is a measurement index that shows the number of teeth with caries in a person or group of people. Decay (d) is a tooth with a cavity due to dental caries, exfoliated (e) is deciduous teeth indicated for extraction because caries, filling (f) is filled or restored due to caries, and t is teeth. In other words, deft is the sum of d+e+f, with following categories: (1) very low (0.0–1.1), (2) low (1.2–2.6), medium (2.7–4.4), high (4.5–6.5), and very high (>6.6). After 10–14 days, the questionnaire was distributed again to obtain knowledge data, as well as a deft examination to obtain information on changes in the condition of the teeth after education. According to the concept of the sleeper effect that people will still remember, the contents of the message delivered within 10–14 days after the message was delivered.

After the next 14 days, the questionnaire was distributed again to get knowledge data, with the concept of a sleeper effect which states that people will still remember the contents of the message that was conveyed after the message was delivered [16]. To determine the effect of education using paint applications on increasing knowledge about dental care in students, the knowledge before and after the intervention using paint applications was compared and analyzed using the paired t-test.

Data analysis

The collected data were analyzed using univariate analysis to determine the frequency distribution of knowledge frequency. To determine the effect of education using paint applications on increasing knowledge about dental care in students, the knowledge before and after the intervention using paint applications was compared and analyzed using the paired t-test.

Ethical considerations

This research was approved by the Health Research Ethics Committee of the Health Polytechnic

of the Ministry of Health of Medan (Referral Number 01.2032/KEPK/Polltekkes of the Ministry of Health of Medan in 2021). This study was approved by the Health Research Ethics Committee of the Health Polytechnic of the Medan Ministry of Health. Before conducting the study, the researcher explained the research objectives, based on 35 items of informed consent from the 2016 CIOMS-World Health Organization (WHO) (explanation before consent).

Results

Identifying frequency distribution of knowledge frequency

The results of the univariate analysis show that it is obtained that before the intervention, the students' knowledge was 56.7% in poor category and 43.3% moderate and after the intervention using the paint application, it was seen that the children's knowledge was 93.3% in good and 6.7% moderate category.

Results of bivariate analysis

It was seen that the results of the examination on all students, the majority of whom were 9 years old, it is known that the average deft was 2.67 and the average DMF-T was 1.23.

Respondent knowledge

Categories of respondents' knowledge are shown in Table 1.

Table 1: Distribution of knowledge frequency

Category	Case				Control			
	Before		After		Before		After	
	n	%	n	%	n	%	n	%
Poor	17	56.7	0	0	16	53.3	0	0
Moderate	13	43.3	2	6.7	14	46.7	24	80.0
Good	0	0	28	93.3	0	0.0	6	20.0
Total	30	100.0	30	100.0	30	100.0	30	100.0

Check caries status (defect and DMF-T)

Dental caries prevalence and severity was investigated using deft and DMFT indices (Table 2).

Table 2: The condition of the teeth

defect	Caries status			
	d	e	f	defect
Total	102	42	16	160
Mean	2.67			
DMF-T	D	M	F	DMF-T
Total	28	9	0	37
Mean	1.23			

The effect of education using the paint application on increasing knowledge about dental health care

The effect of education using the paint application on increasing knowledge of dental health care in students was compared before and after the intervention and analyzed using the paired t-test. The differences in students' knowledge are shown in Table 3:

Based on the paired t-test, it is known that the p value was $(0.000) < (0.05)$ so that education using paint applications has an effect on increasing students' knowledge in maintaining dental health.

Table 3: Differences in respondents' knowledge before and after education using the paint application

Variable	Mean	SD	Mean difference	p
Respondents' knowledge				
Before	8.27	1.413	4.10	0.000
After	12.37	1.217		

Discussion

Student's knowledge

The measurement of students' knowledge is known from the answers to the questions given through a questionnaire. The increase in knowledge before and after the intervention is known based on the category of knowledge. Calculation of knowledge criteria comes from the answers to 15 questions on the questionnaire. If the answer is correct, it is given a score of 1 so that the criteria for knowledge are obtained if it can answer the question correctly, which is bad: 0–5; moderate: 6–10; and good: 11–15.

Based on Table 1, it was obtained data that the students after being educated using paint application media tools, the majority of students (93.3%) were in good category. Educational activities using the paint application look more effective and interactive because it fosters the attention and interest of students and also gets direct feedback. In accordance with the development of an all-digital era with increasingly rapid technological innovations, the development of the use of educational media is required [17]. The COVID-19 pandemic has created the largest disruption of education systems in history, affecting nearly 1.6 billion learners in more than 190 countries and all continents (UNESCO, 2020). With the existing conditions, learning activities are required to be carried out online and students have been able to use technology-based learning media [18].

All schools must do the online learning so computer facilities were needed to support the learning process.

Check caries status (deft and DMF-T)

Based on the results of the examination, it is known that the average deft was 2.67. Likewise,

for all students, the majority of whom are 9 years old, the average DMF-T score was 1.23. From the DMF-T classification according to the WHO [19], the acquisition of this average score was still in the low category (1,2–2,6), but it needs attention in maintaining dental health because starting from the mixed dentition period until later the permanent dentition period if dental hygiene is not maintained, a significant increase in DMF-T can occur. The WHO has set Oral Health Global Indicators for year 2025, one of which was the DMF-T value in primary school-aged children should not be more than 1. Dental caries is still a major health problem in almost all countries and 60–90% experienced by children aged school [5]. Based on the results of previous studies, it is known that knowledge is often not followed by changes in attitudes and actions so that a comprehensive educational program is needed as an effort to improve dental health [20], [21], [22].

The effect of education using paint applications on increasing knowledge about dental health maintenance

During the COVID-19 pandemic, learning in schools requires teachers to be able to innovate in teaching. The benefits may arise from educational innovation, its application becomes a challenge because it requires educators to be able to carry out new teaching and learning practices [23]. In education, good achievement comes from a good learning process. The learning process begins with the willingness of students to accept the material, then gives problems, thereby increasing the independence of students. Identifying problems can be a good opportunity to motivate students in solving students' problems and finding solutions according to their high curiosity. The expected result in education is that the characteristics of self-regulated learning are believing in one's own abilities, being motivated, creative, responsible, and not depending on others [24].

Conclusion

Education using paint application media has increased students' knowledge. It was stated that education using paint applications had an effect on increasing students' knowledge in maintaining dental health. It is hoped that the use of the paint application media will be an alternative in the selection of dental health maintenance educational aids. This research is only based on obtaining changes in knowledge from education using the media, namely, by coloring pictures as educational material with a limited group of images. The direction of further research is that educational materials are expected to be wider so that they can

improve student behavior to independently carry out dental health care.

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