



EFFECTIVENESS OF FLASHCARD-BASED ORAL HEALTH EDUCATION ON ORAL HYGIENE KNOWLEDGE AND ATTITUDES AMONG STUDENTS AT STATE ELEMENTARY SCHOOL 2 PAGERAGEUNG TASIKMALAYA REGENCY, INDONESIA

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ABSTRACT

Background: Elementary school children are at an age that is vulnerable to dental and oral health problems due to lack of knowledge or interesting things such as dental and oral health education using flash card media about oral hygiene can increase knowledge or dental health education. This study aims to determine the effect of dental and oral health education counseling using flash card media on the knowledge and attitudes as well as dental and oral hygiene of elementary school- age children. **Method:** The type of research used was experimental research (quasi experiment), with a one group pre-test and post-test design. The research sample was 30 respondents who were taken using a purposive sampling technique. Data collection used questionnaires before and after and informed consent (IC) sheets. Data analysis used the Wilcoxon statistical test. **Results:** There are differences in knowledge before and after being given dental and oral health education counseling using flash card media about oral hygiene in fourth grade elementary school students ($p = .001$) with a mean pre-test (63%) and a mean post-test (77%). There are differences in attitudes before and after being given dental and oral health education counseling using flash card media about oral hygiene in fourth grade elementary school students ($p = .000$) with a mean pre-test (62%) and a mean post-test (89%). **Conclusion:** Dental and oral health education using flash card media about oral hygiene has a significant effect on increasing the knowledge and attitudes of fourth grade students at SDN 2 Pagerageung, Tasikmalaya Regency.

Keywords: flash card media; knowledge; attitudes; dental health; oral hygiene.

Introduction

According to the World Health Organization (WHO), health is defined as a state of complete physical, mental, and social wellbeing that enables individuals to live productively [1]. Oral health is an integral part of general health, as poor oral conditions can affect quality of life and contribute to systemic health problems [2].

Oral health problems in Indonesia remain relatively high. Data from the Indonesian Ministry of Health through the 2018 Basic Health Research (Riskesdas) reported that the proportion of oral health problems reached 57.6%, with the prevalence of dental caries among school-aged children continuing to increase. Poor toothbrushing behavior and frequent consumption of sugary foods are the main risk factors for dental caries in children aged 6–12 years [3].

Dental caries is one of the most common oral health problems, caused by acid-producing bacteria such as *Streptococcus mutans*, which form plaque as a result of sugar metabolism. If oral hygiene is not properly maintained, plaque accumulates and leads to caries and gum inflammation. Moreover, oral infections may be associated with systemic diseases such as diabetes, cardiovascular diseases, and other health disorders [4].

Elementary school age is a critical period for the development of health behaviors. During this stage, children experience a mixed dentition phase that is vulnerable to damage. However, low levels of knowledge and attitudes toward maintaining oral hygiene remain a challenge. Effective health education is therefore necessary to improve understanding and foster positive attitudes from an early age [5].

Health education is an effort to improve individuals' knowledge, attitudes, and behaviors in order to maintain and enhance their health status [6]. The success of health education is strongly influenced by the methods and media used. Most human knowledge is acquired through the sense of sight; therefore, the use of visual media is considered more effective in delivering health information [7].

Based on a preliminary survey conducted among students of SDN 2 Pagerageung,

Tasikmalaya Regency, it was found that most students prefer sugary foods, some have already experienced dental caries, and the habit of brushing teeth at night is not routinely practiced. In addition, the school has never received prior oral health education. Initial measurements indicated that the students' level of knowledge and attitudes regarding oral health were still in the moderate category.

Based on these problems, an effective oral health education intervention tailored to the characteristics of elementary school children is needed. Therefore, the researcher is interested in examining the effect of oral health education using flash card media on oral hygiene knowledge and attitudes among students of SDN 2 Pagerageung, Tasikmalaya Regency.

Methods

This study employed a quasi-experimental design using a one-group pre-test and post-test approach. This design was used to determine the effect of oral health education on oral hygiene, delivered through flash card media, on students' knowledge and attitudes before and after the intervention.

The study was conducted at SD Negeri 2 Pagerageung, Tasikmalaya Regency. The research subjects were fourth-grade students who met the predetermined inclusion criteria.

The research procedure began with a pre-test to assess the students' baseline knowledge and attitudes regarding oral health. Subsequently, the students received an intervention in the form of oral health education on oral hygiene using flash card media. After the intervention, a post-test was conducted to measure changes in students' knowledge and attitudes.

The instrument used in this study was a questionnaire designed to measure the level of students' knowledge and attitudes toward oral health. The collected data were then analyzed to identify differences in scores before and after the intervention in order to determine the effect of the provided health education.

Results and Discussion

The results of the data analysis obtained through the questionnaire indicate that the implementation of oral health education using flash card media is effective in improving students' knowledge and attitudes toward oral hygiene:

Table 1. Frequency Distribution of Respondents by Gender

No.	Gender	Respondents	%
1	Male	13	43,33%
2	Female	17	56,67%
Total		30	100%

Table 1 shows that the total sample of fourth-grade students at SDN 2 Pagerageung, Tasikmalaya Regency, consisted of 30 respondents, including 13 males (43.33%) and 17 females (56.67%).

Table 2. Frequency Distribution of Respondents by Age

No.	Gender	Respondents	%
1	9 years	2	6,67%
2	10 years	28	93,33%
Total		30	100%

Table 2 shows that there were two age groups, namely 9 and 10 years old. There were 2 respondents aged 9 years (6.67%) and 28 respondents aged 10 years (93.33%).

Table 3. Level of Knowledge of Fourth-Grade Students at SDN 2 Pagerageung, Tasikmalaya Regency Before Health Education Using Flash Card Media

No.	Knowledge Criteria	Frequency	(%)
1	Good	3	10%
2	Fair	18	60%
3	Poor	9	30%
Total		30	100%

Table 3 shows that the level of knowledge among fourth-grade students at SDN 2 Pagerageung, Tasikmalaya Regency, before receiving health education using flash card media was predominantly in the fair category, with 18 students (60%).

Table 4. Level of Knowledge of Fourth-Grade Students at SDN 2 Pagerageung, Tasikmalaya Regency After Health Education Using Flash Card Media

No.	Knowledge Criteria	Total	(%)
1	Good	17	56,67%
2	Fair	11	36,66%
3	Poor	2	6,67%
Total		30	100%

Table 4 shows that the level of knowledge among fourth-grade students at SDN 2 Pagerageung, Tasikmalaya Regency after receiving health education using flash card media was predominantly in the good category, with 17 students (56.67%).

Table 5. Average Knowledge Scores of Fourth-Grade Students at SDN 2 Pagerageung, Tasikmalaya Regency Before and After Health Education Using Flash Card Media

No.	Knowledge	Frequency	Criteria
1	Before	63%	Fair
2	After	77%	Fair

Table 5 shows that the average knowledge score of fourth-grade students at SDN 2 Pagerageung, Tasikmalaya Regency, before the health education using flash card media was 63% (fair), and after the intervention it increased to 77% (fair), indicating an improvement of 14 percentage points (70%).

Table 6. Attitude Level of Fourth-Grade Students at SDN 2 Pagerageung, Tasikmalaya Regency Before Health Education Using Flash Card Media

No.	Criteria	Total	(%)
1	Good	5	16,66%
2	Fair	11	36,67%
3	Poor	14	46,67%
Total		30	100%

Table 6 shows that the attitude level of fourth-grade students at SDN 2 Pagerageung, Tasikmalaya Regency, before receiving health education using flash card media was predominantly in the poor category, with 14 students (46.67%).

Table 7. Attitude Level of Fourth-Grade Students at SDN 2 Pagerageung, Tasikmalaya Regency After Health Education Using Flash Card Media

No.	Criteria	Total	(%)
1	Good	25	83,3%
2	Fair	5	16,7%
3	Poor	0	0%
Total		30	100%

Table 7 shows that the attitude level of fourth-grade students at SDN 2 Pagerageung, Tasikmalaya Regency after receiving health education using flash card media was predominantly in the good category, with 25 students (83.3%).

Table 8. Average Attitude Scores of Fourth-Grade Students at SDN 2 Pagerageung, Tasikmalaya Regency Before and After Health Education Using Flash Card Media

No.	Attitude	Mean	Criteria
1	Before	62%	Fair
2	After	89%	Good

Table 8 shows that the average attitude score of fourth-grade students at SDN 2 Pagerageung, Tasikmalaya Regency before receiving health education using flash card media was 62% (fair), and after the intervention it increased to 89% (good), indicating an improvement of 27 percentage points (75.5%).

Table 9. Average Knowledge Scores of Fourth-Grade Students at SDN 2 Pagerageung, Tasikmalaya Regency Before and After Health Education Using Flash Card Media

<i>Post Test – Pre Test</i>	
Z	-3.411 ^b
Asymp. Sig. (2-tailed)	.001

* *Wilcoxon Signed Ranks Test*

Table 9 shows that the results of the Wilcoxon statistical test for knowledge scores before and after health education using flash card media yielded an asymp. sig. (2-tailed) value of 0.001. This indicates that the asymp. sig. (2-tailed) value of 0.001 is less than 0.05, therefore it can be concluded that the hypothesis is accepted, as there is a significant difference between the pre-test and post-test results using flash card media

Table 10. Average Attitude Scores of Fourth-Grade

Students at SDN 2 Pagerageung, Tasikmalaya Regency Before and After Health Education Using Flash Card Media

<i>Post Test – Pre Test</i>	
Z	-4.274 ^b
Asymp. Sig. (2-tailed)	.000

* *Wilcoxon Signed Ranks Test*

Table 10 shows that the results of the Wilcoxon statistical test for attitude scores before and after health education using flash card media yielded an asymp. sig. (2-tailed) value of 0.000. This indicates that the asymp. sig. (2-tailed) value of 0.000 is less than 0.05; therefore, it can be concluded that the hypothesis is accepted, as there is a significant difference between the pre-test and post-test results using flash card media.

This study was conducted at SDN 2 Pagerageung, involving 30 fourth-grade students selected through purposive sampling, consisting of 13 male students and 17 female students. The intervention was carried out over three sessions within a seven-day period, with a two-day interval between each session. This repeated intervention pattern aimed to strengthen information retention and attitude formation, and is consistent with the study by Habibah and Danan (2019), which emphasizes the importance of repetition in oral health education to improve behavioral change [8].

The improvement in respondents' knowledge after the intervention can be explained by learning theory, which emphasizes the use of visual media as an educational stimulus [9]. Flash card media presents material in a concise, systematic, and communicative manner, making it easier for students to understand the concepts delivered. Engaging visual presentation can enhance attention, facilitate comprehension, and strengthen information retention in long-term memory. These findings are consistent with the study by Unika and Ratih (2022), which stated that the use of flash card media is effective in improving oral hygiene knowledge and skills among elementary school students [10].

Theoretically, these findings are consistent with the concept proposed by Soekidjo Notoatmodjo (2014), which states that knowledge is a cognitive domain that forms the

basis for the development of attitudes and behaviors. Attitudes supported by adequate knowledge tend to be more stable and sustainable compared to those not supported by proper understanding. Therefore, improving knowledge through appropriate educational media will contribute to the development of more positive oral health maintenance behaviors [11].

The findings of this study are also consistent with various previous studies that demonstrate the effectiveness of visual media in learning. Flash card media has advantages in presenting material in a concise, clear, and easily understandable manner for elementary school children. In addition, its practical size and attractive visual design can enhance students' learning motivation and active participation during the educational sessions. The two-way interaction that occurs during the use of this media also allows for feedback, which further strengthens students' understanding of the concepts.

Overall, the results of this study demonstrate that oral health education using flash card media is effective in improving the knowledge and attitudes of elementary school students. The practical implication of these findings is the need to integrate visual-based educational media into the School Dental Health Program (UKGS) as a promotive and preventive strategy to reduce the prevalence of oral health problems among school-aged children.

Conclusion

This study shows that oral health education using flash card media on oral hygiene has a significant effect on improving the knowledge and attitudes of fourth-grade students at SD Negeri 2 Pagerageung, Tasikmalaya Regency.

The results of the Wilcoxon test analysis indicate a significant difference between pre-test and post-test scores in both knowledge ($p = 0.001$) and attitude ($p = 0.000$) variables. Therefore, it can be concluded that the intervention was effective in enhancing students' understanding and in shaping positive attitudes toward maintaining oral hygiene.

These findings suggest that flash card media can be used as an effective alternative

educational tool in oral health promotion programs for elementary school children.

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