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THE EFFECTIVENESS OF QUARTET CARD GAME IN IMPROVING KNOWLEDGE DENTAL HEALTH

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Abstract

Problem Dental and oral health is still one of the issues frequently experienced by people throughout the world, including the Indonesian people. The community needs to get dental health *promotion efforts* through various media because the media has the ability to convey messages in an interesting, easy-to-understand and understandable way. One of the *promotional efforts* is by using game media so that it can be used as an educational medium about dental and oral health, namely the quartet card game. This study aims to determine the effectiveness of the quartet card media on increasing knowledge of dental and oral health of 4th grade students of UPT SPF Tidung State Elementary School, Makassar City. The type of research used *is quantitative* with a *quasi-experimental method of one group pre-post test* including game socialization, *pre-test* , game implementation, and *post-test* with a *non-probability sampling technique* by *purposive sampling* totaling 69 respondents. Analysis of the research results using the *Wilcoxon test non-parametric* testing . The average value of students' knowledge before was 67.54 and the average value of knowledge after was 88.12 with a difference value of 20.58. Respondents experienced an increase in knowledge scores after playing the quartet card game.

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Introduction

Oral health is an integral part of general health and contributes to an individual's quality of life (World Health Organization [WHO], 2023). Universal Health Coverage (UHC) emphasizes the importance of access to quality health services without financial barriers, including oral health services. However, based on 2019 Global Burden of Disease (GBD) data, approximately 3.5 billion people worldwide face oral health problems, indicating a significant disease burden (Uliana et al., 2024) . In Indonesia, the 2018 Basic Health Research (Riskesdas) reported a prevalence of tooth decay of 45.3%, with 14% experiencing gum swelling or abscesses (Widyawati, 2021)

Effective oral health promotion is essential for changing public behavior toward a healthy lifestyle. Health communication theory emphasizes the role of media as a means of delivering engaging and easily understood messages to increase knowledge and motivation for behavior change (AH Pratiwi et al., 2020) . However, traditional learning methods such as lectures and discussions are often ineffective in maintaining student attention and understanding (Ningsih et al., 2020) .

The quartet card game is a learning medium that combines cognitive and affective aspects through visualization of materials and social interaction, thus improving understanding and retention of knowledge (D. Pratiwi et al., 2020) . Previous research has shown the effectiveness of quartet card media in improving student learning outcomes in various subjects (Wijayanti et al., 2023) . However, studies examining the use of this media specifically for dental and oral health knowledge in elementary school children are still limited. Based on the less than optimal dental and oral health conditions at Tidung Public Elementary School, Makassar, and the need for innovative learning methods, this study aims to test the effectiveness of the quartet card game in improving understanding of dental and oral health in fourth-grade elementary school students as an innovative and fun promotional effort.

Method

This research is a quantitative study using a quasi-experimental design aimed at measuring the influence of educational media on the understanding of school-age children. The study was conducted at SPF UPT SD Negeri Tidung, Makassar City, from February to April 2025. The population consisted of all 502 students of SD Negeri Tidung, while the sample was selected using purposive sampling, resulting in 69 fourth-grade students who met the inclusion and exclusion criteria.

To strengthen the study design, participants were divided into an intervention group and a control group. The intervention group received dental and oral health education using a quartet card game, while the control group received conventional education methods or no intervention for comparison.

Data collection was carried out using a structured questionnaire administered before (pretest) and after (posttest) the intervention. The questionnaire underwent validity testing using content and construct validity, and reliability testing using Cronbach's alpha to ensure consistency of the instrument.

Data analysis was performed to compare the level of knowledge before and after the intervention within and between groups. Thus, this research method allows researchers to more rigorously assess the effectiveness of the quartet card game in improving dental and oral health knowledge among fourth-grade elementary school students.

Result

This research was conducted at the SPF UPT of Tidung Elementary School, Makassar City, South Sulawesi, with 69 respondents, consisting of 4th-grade Daisy, 4th-grade Daffodil, and 4th-grade Dandeleon students. Knowledge levels were measured twice: once before the counseling session (pretest) and once after the counseling session (posttest). Quartet cards were used as the media for dental and oral health counseling. Quartet Cards is a specially designed educational tool for teaching and providing information about dental and oral health, adapted from the card game Quartet. The primary goal of this game is to expand elementary school children's knowledge about dental and oral health.

Based on the suboptimal dental and oral health conditions at Tidung Public Elementary School, Makassar, and the need for innovative learning methods, this study aims to evaluate the effectiveness of the quartet card game in improving dental and oral health understanding among fourth-grade students. The expected outcome is a statistically significant increase in students' knowledge scores, with the majority of participants achieving a good level of understanding, as well as improved engagement and participation during the learning process**.**

Table 1. Distribution of Respondent Characteristics According to Knowledge Level (*Pre-Test*)

Category	Frequency	Percentage (%)
Good	29	39.14
Enough	21	33.33
Not enough	19	27.53
Total	**69**	**100**

Data was found in the good knowledge category, with 29 respondents (39.14%). Respondents in the sufficient knowledge category had 21 respondents (33.33%), and respondents in the poor knowledge category had 19 respondents (27.53%)

Table 2. Distribution of Respondent Characteristics by Level Knowledge (*Post-Test*)

Category	Frequency	Percentage (%)
Good	67	97.11
Enough	2	2.89
Not enough	0	0
Total	**69**	**100**

The highest percentage of respondents were in the good knowledge category, with 67 respondents (97.11%). Respondents in the adequate knowledge category had 2 respondents (2.89%).

Table 3. Normality Test of *Pre-Test* and *Post-Test Data*

Group	Kolmogorov-Smirnova		
	Statistics	df	Sig.
Pre-Test	0.203	69	<0.001
Post-Test	0.213	69	<0.001

Table 4. Effectiveness Test

Ranks	N	Mean			Sig.
		Pre-Test	Post-Test	Score Difference	
Negative Ranks	0	67.54	88.12	20.58	<0.001
Positive Ranks	66				
Ties	3				
Total	69				

The result is the negative ranks value is 0, meaning no respondents experienced a decrease in knowledge. The positive ranks value is 66, meaning 66 respondents experienced an increase in knowledge after playing the quartet card game. Furthermore, there were 3 respondents who did not experience a change in knowledge, or ties = 3

Discussion

A person's ability to understand the information presented is crucial, especially for children in the context of dental health education. It's important to remember that children are in a developmental and habit-forming stage. Successful oral health education not only improves children's understanding of dental health but can also lead to positive behavioral changes.

The results of the research conducted by the author showed that the level of knowledge of *pre-test respondents* in the good category of knowledge with a percentage of 39.14%, knowledge of the sufficient category with a percentage of 33.33% and the knowledge category less with a percentage of 27.53%. Then after the quartet card game was played, the level of knowledge of *post-test respondents* in the good category of knowledge was 97.11%, and knowledge of the sufficient category was 2.89%. In addition, the results of the analysis using the Wilcoxon test showed that the average value of respondents' knowledge before the quartet card game was played = 67.54, then after the quartet card game experienced an increase in the average value of knowledge = 88.12. then the Sig. value obtained from the Wilcoxon test = <0.001 or Sig. <0.05, which means that respondents experienced a significant increase in knowledge value after playing the quartet card game. Before the game using quartet card media, respondents were given a questionnaire sheet first (*Pre-test*) and explained how to fill it out and see how respondents answered the questions, some respondents had questions on question number 1 on the questionnaire sheet, namely which part of the molars and the researcher explained which part of the molars, after all respondents answered the questionnaire, the researcher collected all the questionnaires. Then the respondents were divided into groups and given a quartet card game , then the researcher explained how to play, the respondents started the game accompanied by the researcher and explained some of the materials contained in the card, such as molars functioning to chew food and showing which part of the molars. After the quartet card game, the researcher distributed a questionnaire sheet (*Post-test*) to respondents with the same questionnaire as during the pre-test and the researcher observed that respondents who asked questions on question number 1 during *the pre-test* no longer asked.

Research conducted by Fitriani, S. (2021) entitled The Effectiveness of Healthy Living Quartet Media on the Knowledge and Attitudes of Margamulya Elementary School Students in Singaparna District, Tasikmalaya Regency on all 113 students in grades 4 and 5. The analysis results obtained an average value of student knowledge before was 5.73 with a standard deviation of 2.131. Knowledge after was an average of 8.54 with a standard deviation of 1.239. The results of the statistical test obtained a value of 0.000 <0.05. The results of the statistical test indicate that the use of quartet media has a significant impact on increasing student knowledge at the elementary school level. (Fitriani, 2021)

In addition, research conducted by Aritonang et al. (2024) with the title Overview of Quartet Card Media Games on the Level of Knowledge of How to Brush Teeth in Grade IV Students of SD Negeri 105332 Sei Blumei, Tanjung Morawa District. According to the criteria of students' knowledge about how to brush their teeth before playing quartet card media, 13 students (27.7%) had good knowledge, 20 students (42.5%) had sufficient knowledge, and 14 students (29.8%) had sufficient knowledge. insufficient knowledge. Meanwhile, students' knowledge about brushing teeth increased significantly after playing quartet card media. Among students, 25 (53.2%) had good knowledge, 18 (38.2%) had sufficient knowledge, and 4 (8.5%) had knowledge that needed to be improved. Therefore, it can be concluded that the ability to brush teeth correctly and effectively can be improved by playing quartet card media (Aritonang et al., 2024) .

Research by Obi and Laiskodat (2025) entitled The Effect of Dental Health Education Using Quartet Cards on Students' Knowledge Levels. The results of the *pre-test* were good (67%), moderate (33%), and moderate only (17%). The level of knowledge in *the post-test* increased with a percentage of good (83%), moderate (17%), and an average value of 82.28 before and 86.67 after the education. As shown, 4th and 5th grade students at SD Inpres Naimata gained better knowledge through dental health education using quartet cards. The standard deviation values before and after the education were 13.676 and 12.435, respectively, with an average difference of 1.24, and a p-value of 0.001. The increase in student knowledge increased significantly after receiving dental health education. (Applonia Leu Obi & Laiskodat, 2025)

Therefore, learning media using quartet card games has proven highly effective in expanding children's insight and knowledge about dental and oral health. The use of quartet cards has been shown to be effective in improving knowledge and toothbrushing behavior in elementary school children. Analysis of the results showed that children who received counseling using this media experienced significant improvements.

Conclusions and Suggestions

The quartet card game effectively improved dental and oral health knowledge among fourth-grade students, as evidenced by a significant increase in post-intervention scores and a shift toward the good knowledge category. Practically, this medium can be integrated into school health programs and classroom activities as an engaging and interactive educational tool. Teachers and school health personnel can use the game during lessons or extracurricular sessions to enhance student participation and understanding in a fun and sustainable way. Further studies are recommended to evaluate its standalone effectiveness across broader age groups and educational settings.

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