

Comparison Of The Effectiveness Of Education Methods Between Quartet Card Games And Lectures On Students' Oral Health Knowledge

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ABSTRACT

Background: This study aims to determine the differences in the effectiveness of education methods between the quartet card game method and the lectures method on the level of students' oral health knowledge

Method: This study uses a cross-sectional study method. The subjects were 30 students of SD Islam Terpadu Asshodihiyah Semarang by aged 11-12 years old. The subjects receive dental and oral health education. One group received education using the quartet card game method and the other group received education using the lectures method. The level of students' oral health knowledge was measured using a questionnaire (pre test and post test).

Result: The Wilcoxon test results showed a significant difference between the pre-test and post-test scores of the quartet game method ($p=0.036$). There was a significant difference between the pre-test and post-test scores of the lecture method ($p=0.002$). The Mann-Whitney test results showed no significant difference between the post-test scores of the quartet card game method and the test scores of the lecture method ($p=0.254$).

Conclusion: Quartet card games can be used as an alternative learning method that can increase student involvement in learning, resulting in good knowledge retention

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INTRODUCTION

The 2023 Indonesian health survey showed that the DMF-T index of primary teeth in the 5-year-old age group was in the very high category.¹ In the 12-year-old age group, the DMF-T index was in the low category, but as age increases, the DMF-T index will also increase.¹ Survey results in 2018, Riset Kesehatan Dasar (RISKESDAS) showed that the prevalence of the population with problems with cavities or pain in the 10-14 year age group was 41.4%.² The results of interviews with respondents aged 3 years and above regarding the habit of brushing their teeth at the correct time, namely brushing their teeth twice a day, in the morning after breakfast and at night before going to bed, showed that 6.2% already had the habit of brushing their teeth correctly.¹

Children's oral health status can affect their quality of life. The results of the study showed a significant relationship between dmft scores and *Early Childhood Oral Health Impact Scale* (ECOHIS).³ Positive behavior and personal abilities of children are believed to develop during school. Oral health education conducted during school will affect a child's life.⁴ Lectures are one of the most common educational methods used in health education.⁵ School-based oral health education through traditional lectures has proven successful in increasing oral health knowledge, but its effectiveness in maintaining oral hygiene behavior is low.⁶

The educational game method can convey advice and have a positive influence on health outcomes, as has been proven by a number of studies in the health sector.⁷ Card games support game-based learning and can also increase motivation and effectiveness of learning. In previous studies, it was found that educational card games not only increase students' learning motivation but also help students in forming better conceptual abstracts.⁸ Quartet card games for elementary school children are selected according to the child's cognitive development age.⁹ The results of the study showed that there was an increase in knowledge and attitudes regarding dental and oral care after respondents received dental and oral health education using quartet cards.¹⁰ Teaching methods that can increase student engagement and encourage independent learning are believed to be effective in conveying knowledge and explaining difficult concepts leading to improved learning.⁵ This study aims to determine the differences in the effectiveness of education between the quartet card game method and the lecture method on the level of oral health knowledge of elementary school students.

RESEARCH METHOD

This research uses an experimental method with pre-post-test design study. This study has obtained a certificate of ethical feasibility from the Health Research Ethics Commission of the Faculty of Dentistry, UNISSULA Number 551 / B.1-KEPK / SA-FKG / V / 2024. The subjects in this study were 30 students of the Asshodihiyah Semarang Integrated Islamic Elementary School aged 11-12 years. This study used total sampling. The study was conducted by dividing students into 2 large groups, namely 14 students who received dental and oral health education using the quartet card game method and 16 students who received dental and oral health education using the lecture method. The topics of dental and oral health education presented were tooth anatomy, number of teeth, types and functions of teeth, how to maintain dental and oral health, how to brush teeth, and dental and oral diseases. The quartet cards used were 6 cm x 9 cm in size, 1 set of cards consisted of 28 cards divided into 7 sub-topics of dental and oral health. The level of students' dental and oral health knowledge was measured using pre-test and post-test questionnaires. Pre- and post-test score data were analyzed using the Shapiro-Wilk normality test and continued with a comparative hypothesis test using

the Wilcoxon test to compare the pre and post-method scores on each educational media. The Mann-Whitney test was used to compare the post-test scores between the quartet card game method and the lecture method.

RESULTS

This study was attended by 30 respondents with an almost balanced age distribution listed in Table 1. Table 2 shows that there was an increase in post-test scores in both extension media. The average post-test score for the quartet card media (8.7) was higher than the post-test score for the lecture method group (8.3).

Table 1. Respondent characteristics

Characteristics	Amount	(%)
Age		
11 years old	16	53.3%
12 years old	14	46.6%
Gender		
Man	23	56.6%
Woman	13	43.3%

Table 2. Average pre and post test scores

	n	Mean
Quartet card media pre-test score	14	7.8
Quartet card media post test score	14	8.7
Pre-test score of lecture media	16	6.7
Post test scores of lecture media	16	8.3

Table 3. Normality test

	Shapiro Wilk	
	n	p
Quartet card media pre-test score	14	0.028
Quartet card media post test score	14	0.005
Pre-test score of lecture media	16	0.001
Post test scores of lecture media	16	0.062

Table 3 shows the normality test of the pre- and post-test scores of the quartet card game method and the pre-test scores of the lecture are not normally distributed, while the post-test scores of

the lecture are normally distributed. The comparative hypothesis test will be used to compare the pre- and post-test scores of each method using the Wilcoxon test. Comparative hypothesis test to compare post-test scores between the quartet card game method and the lecture method using the Mann-Whitney test.

Table 4. Wilcoxon hypothesis test

	n	p
Quartet card media pre-test score	14	0.036
Quartet card media post test score	14	
Pre-test score of lecture media	16	0.002
Post test scores of lecture media	16	

Table 5. Mann-Whitney hypothesis test

	n	p
Quartet card media post test score	14	0.254
Post test scores of lecture media	16	

The results of the comparative test of pre-and post-test scores on each media showed that there was a significant difference between the pre-and post-test scores for both the quartet game method ($p=0.036$) and the lecture method ($p=0.002$) as listed in Table 4. Table 5 shows that there was no significant difference between the post-test scores for the quartet card game method and the lecture method test scores ($p=0.254$).

DISCUSSION

The results of the study show that dental and oral health education using quartet card media can significantly improve students' knowledge about dental and oral health ($p = 0.036$). The results of this study are in accordance with the research of Dewi et al (2024) namely that quartet card media education is effective in improving elementary school students' tooth brushing behavior. Quartet card media can create a fun learning situation so that it can enhance students' knowledge.¹¹ The learning method with quartet card games has several advantages, including learning materials that are easier to memorize and understand, can help increase motivation and interest in learning so that the results obtained can be more satisfying. Quartet card games are considered very good in terms of game interest and the readability of the material presented.^{12,13} The results of student perceptions in the education group using card games were better compared to the control group.¹⁴ Quartet card games are one of the uses of learning media that is considered effective and efficient in supporting the learning process.¹⁵

The results of the study showed that oral and dental health education using the lecture method can significantly increase students' knowledge about oral and dental health ($p = 0.002$). The results of the study are following Almashayek et al (2022), namely that there is a significant difference between the pre-test and post-test scores in the lecture method education group.¹⁰ Traditional learning methods such as lectures are useful strategies for improving competency dimensions which include knowledge, ability, and attitude. The lecture method is considered more efficient in terms of cost and can provide information to a large number of people in the same room.¹⁷ Traditional methods can be considered boring by students, students have difficulty maintaining focus during learning methods, resulting in decreased retention of the information received. The results of the study showed that students pay more attention to the lecture method if it is presented systematically and interestingly.¹⁶

The effectiveness of a learning method is determined by the increase in understanding obtained after implementing a learning method, which can be in the form of increased student cognitive understanding of the material.¹⁵ From both educational methods that have been carried out in this study showed equally good results in improving students' dental and oral health education knowledge, although the results of the post- test comparison analysis between the quartet card game method and the lecture method did not show significant results ($p = 0.254$). A number of empirical evidences state that students with lecture method learning are more likely to fail compared to students with active learning methods. Active learning allows students to be more able to think critically, ask questions and participate in discussions.¹⁶ Games used as a learning method can increase student engagement in learning, thus encouraging students to take responsibility for their learning. Games can also improve communication, interaction with other players, and can create a non-threatening atmosphere that can support collaborative learning.¹⁹ Card games are considered to provide positive learning experiences and can simplify learning.¹⁸ Card games in health education can provide several long-term benefits. Study results show that quartet card games can improve knowledge retention, self-efficacy, and behavioral change in students.¹³

CONCLUSION

Both methods, namely the quartet card game method and the lecture method, have proven to be effective. effective in improving students' dental and oral health knowledge. A comparison of the effectiveness between the quartet card game and the lecture method showed no significant difference. The quartet card game can be used as an alternative learning method that can increase student involvement in learning, resulting in good knowledge retention.

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