

## QUARTET CARD GAME IMPROVES KNOWLEDGE, BEHAVIOR AND ATTITUDE OF CHILDREN ABOUT DENTAL CARE AND ORAL HEALTH

Nurlaila, Rizki Rachmat Tulloh, Ning Iswati

STIKES Muhammadiyah Gombong, Kebumen, Indonesia  
Corresponding author email address: ners\_ela@yahoo.co.id

### ABSTRACT

Dental caries is a common problem in children. Health education by playing games is necessary to improve skills of children in dental care and oral health. Health education materials with quartet cards are presented in the form of pictures and interesting information. The purpose of this study was to determine the effect of quartet card game method in improving knowledge and attitude about oral and dental health. The study used quasi experiment research with pre and post-test group designs. Samples were 56 children aged 8-10 years. Data analysis used paired sample-test. The results show that there was an increase in knowledge and attitude after health education using a quartet card game. Regarding knowledge, analysis showed  $t=13.635$ ,  $p$  value = 0.000,  $\alpha$ : 0.05, while on attitude aspect, analysis showed  $t= 9,352$  and  $p$ -value = 0.000  $\alpha$ : 0.05. Quartet card game is effective to improve knowledge and attitude about dental care and oral health among children.

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*Keywords:* quartet card, health education, knowledge

### ABSTRAK

*Karies pada gigi adalah masalah yang banyak terjadi pada anak. Pendidikan kesehatan dapat digunakan untuk meningkatkan kemampuan anak untuk melakukan perawatan gigi dan mulut. Pendidikan kesehatan menggunakan kartu quartet dapat menarik minat anak lewat gambar dan informasi yang menarik. Penelitian ini bertujuan untuk mengetahui pengaruh pendidikan kesehatan dengan kartu quartet dengan pengetahuan dan sikap anak untuk melakukan perawatan gigi dan mulut. Penelitian ini menggunakan desain quasi experiment. Total responden yang terlibat ada 56 anak dengan usia 8-10 tahun. Penelitian ini menunjukkan adanya peningkatan pengetahuan dan sikap terkait perawatan gigi dan mulut setelah responden menerima perlakuan. Untuk pengetahuan, hasil analisa menunjukkan nilai  $t=13.635$  dan  $p$ -value = 0.000,  $\alpha= 0.05$ , sementara untuk sikap analisa menunjukkan nilai  $t= 9,352$  dan  $p$  value = 0.000,  $\alpha= 0.05$ . Pendidikan kesehatan dengan menggunakan kartu quartet dapat meningkatkan pengetahuan dan sikap pada anak terkait perawatan gigi dan mulut.*

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*Kata kunci:* kartu quartet, pendidikan kesehatan, pengetahuan

### BACKGROUND

Dental caries is commonly found in children. The data of RISKESDAS (Department of Health Research and Development Health Ministry of Indonesia, 2013) shows that prevalence of dental and mouth problem is about 25.

9%. In Central Java the number is quite similar which about 25.4%. However, the prevalence rate among children aged less than 10 years is considered high, which reach about 40.4%. Dental and oral problems can be affected by irregular practice of tooth brushing in the

morning, after meals and before night's sleep. Most of Indonesian brush their teeth during morning bath, which are about 94.2%, but on the contrary only 3.8% of population practice tooth brushing after breakfast. About 27.3% of population brushes their teeth before night's sleep. Among those, only 2.3% brush their teeth properly. Brushing teeth at optimal times is needed, particularly after breakfast and before bed. Brushing teeth after meals in the morning and before bedtime aims to clean up remains after having breakfast and dinner (Hockenbeery & Wilson, 2011).

One of the strategies to prevent dental problems is by providing knowledge and changing the attitude and behavior of children regarding dental care. Health education is important as it is one of the approach to influence others, whether individuals, groups, or communities to achieve better health. Dental health education is expected to be provided to children as early as possible to support good dental care behavior in adulthood. The study used game stimulation method for health education. It is a combination of role play with group discussion. Health messages are presented in several game forms such as quartet card games (Notoatmodjo, 2007). Dental health education was conducted using quartet card game. Quartet card game was chosen because it is fun. Material on the card was presented in the form of an image completed with the caption. The title card captions were located on the top part of the card with threaded writing and the title of the image is located in the middle between the title of the card and the picture. The description of the image is written in a color which is different the title of the other image. This method has advantages such as simple, easy to be

played anywhere, easy to be stored, can be played by children in large or small group, and students can participate actively in the game. A previous research conducted by Mufidah (2015) found that health education through quartet game improving clean and healthy life behavior in Darussalam Elementary School Surabaya.

Preliminary study at Sumpiuh 2 Elementary School on February 7, 2017 to 10 students showed that 9 students (90%) had cavities, 1 student (10%) had non-hollow teeth, 8 students (80%) often experienced toothache, 8 students (80%) did not see dentist, 10 students (100%) had thrush, and 5 students (50%) students brushed teeth only 2 times a day while bathing. Following interviews with teachers it was found that the school health unit had not been implemented properly and the school had not conducted health education about dental and oral health. The purpose of this study is to determine the effect of quartet card game method in improving knowledge and attitude about oral and dental health among children.

## **METHOD**

This is a quasi experimental research with one group pre-test-post test design. Respondents are 56 students of grade II-IV aged 8-10 years of Sumpiuh 2 State Elementary School. It is in line with WHO 2015 recommendation which suggest to involve certain age group who more cooperative and self-sufficient in tooth brushing activities for dental health research. The study was conducted on April, 2017. Total sampling method was used in this study. Knowledge is measured by a questionnaire consist of 25 multiple choice questions, while attitude is measured using questionnaire consist of 25 likert scale type problems.

Health education on oral and dental health using quartet card game method was conducted for 60 minutes. Respondents were divided into 14 groups. Quartet card games was conducted for 3 days: first day for 5 groups, second day for 5 groups, and third day for 4 groups. Each group consists of 4 students accompanied by 1 facilitator.

Before starting the game, the first player sequence who would like to be the first, second and so on until the last by hompipah. The facilitator shuffled the cards, gave each player 6 cards and placed the remaining cards in the middle. The player who got the first turn could ask for the subtitle that would be completed to one of the players for example: one player asked "I want to ask the card "How to brush your teeth, Front part please?", Whoever had the card in question, then the player asked to check the card owned, if the player owned the card then the player said 'Ada (there is)' and players may request subtitles to other players, if the player still had the card with the title. If the player did not have the card in question, then the player could say 'no', then the player turned to another player to take one card in the middle. If there was a player completed 4 cards in 1 title, then he must put the card below and earn 1 point. The winner was the person who managed to collect the title of card/points most during the game. Data analysis used paired t-test. If p value <0.05, it means there is significant difference in mean score of knowledge or attitude before and after health education using quartet card game.

## RESULTS

**Table 1. Demographic Characteristics of Respondents (n = 56)**

Characteristics	Frequency	(%)
Age	20	35,7
8 years	18	32,1
9 year	18	32,1
10 years		
Gender	32	57,1
Female	24	42,9

Table 1 shows that age distribution of respondents are almost equal, while the number of male student is slightly higher than their counterpart (57.1%).

**Table 2. Frequency distribution of respondents' knowledge about dental care and oral health (n=56).**

Category	Pre test		Post Test	
	N	%	N	%
Good	5	8.9	48	85.7
Medium	41	73.2	8	14.3
Low	10	17.9	0	0

The results of pre-test indicate that most respondents' knowledge were in medium category (73.2%), while for post-test it was indicated that knowledge of most of the respondents were in good category (85.7%).

**Table 3. Frequency distribution of respondents' attitude regarding dental care and oral health (n=56)**

Category	Pre test		Post Test	
	N	%	N	%
Good	0	0	31	55.4
Medium	49	87.5	25	44.6
Low	7	12.5	0	0

Pre-test showed that most respondents' attitudes were in medium category (87.5%), while for post-test, most respondents' attitude were in good category (55.5%).

**Table 4. The influence of quartet card games to knowledge score**

Variable	Mean	SD	SE	t	P value
Before	11.4	0.3	0.04	13,635	0.000
After	20.9	0.5	0.06		

Mean score of knowledge before health education was 11.4 (SD 0.3). Following the health education, mean score was 20.9 (SD 0.5). The mean difference was 9.5 (SD 0.2). The statistic test showed p value 0.000, so it can be

concluded there is a significant difference on mean score of knowledge before and after health education.

**Tabel 5. The Influence of Quartet Games to Knowledge Level**

Variable	Mean	SD	SE	t	P value
Before	14.5	0.3	0.04	9,352	0.000
After	21.2	0.5	0.06		

Mean score of attitude before health education was 14.5 (SD 0.3) and after the health education was 21.2 (SD 0.5). The mean score difference before and after treatment was 6.70 (SD 0.2). The statistic test showed p value 0.000. It means that there is a significant difference in means score of attitude before and after health education.

**DISCUSSION**

**Knowledge of dental and oral health before and after health education**

Result show that average of knowledge of the respondents increased about 6.70 point, from 14.5 before quartet card game intervention to 20.9. It means that quartet card game can improve the students' knowledge about oral care and dental health. This result is similar to Mardiah (2010) which found that game method in health education could increase knowledge level of elementary school students. Research by Kusuma (2010) also revealed that Teams Games Tournament method using printed image media could increase learning outcomes of student in State Elementary 2 Sukoharjo.

Health education followed by question and answer session can increase knowledge and understanding about dental health in everyday life. According to Adisasmoto (2008) by getting health information from health workers at least

people will think about the importance of health and strive for health measures.

Similar study has been conducted by Hamdalah (2013) which investigated the effectiveness of pictorial picture media and snake ladder in oral and dental health education among students of SDN 2 Patrang Jember District. This study indicates the effectiveness of health education to increase knowledge. In addition, research on the effectiveness of quartet card promotional media using slide on the knowledge and attitude regarding clean and health behavior among elementary school students has been conducted by Harjanto (2013). This study proved that the use of media promotion of quartet card health is effective to increase knowledge about clean and health behavior among elementary school students in Depok by 27.53%.

**Attitude About Oral Health Before and After Health Education**

The results showed change in attitude of respondents before and after the quartet card game intervention. Pre test score was 14.5 and post test score increased to 21.2. This attitude change in students is inseparable from the process of increasing knowledge. Students showed better attitude after knowing about the importance of maintaining oral health. A good attitude on dental and oral health is expected to motivate students to practice dental care properly. This study is in accordance with research conducted by Wati (2011) which found that there is a change in student attitudes in Bulukantil Surakarta following PHBS counseling.

According to Mubarak (2009) attitude is triggering factor for an action or behavior. A study conducted by Dian (2012) found that attitude score of

respondents increased, and most of the respondents had positive attitude following health education using a modified snake ladder simulation method. Lubis (2013) examined the influence of health education by lecture method on the attitude of primary school students in Medan. Results showed that an improvement of students' knowledge can change student's attitudes.

## CONCLUSION

The results of this research show that quartet card game is effective to improve knowledge and attitude on dental care and oral health among school age children. Quartet card game can be used as an alternative method of health education to improve children's knowledge and attitude on health care. Researcher is recommended to conduct research comparing the effectiveness of quartet card games with other learning methods.

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