

# Understanding of School-age Children in Caring of Dental Caries by using Animated Digital Video

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Abstract: Dental health education must be introduced early to children so they can find out how to maintain good and correct dental and oral health, and it important too for who has caries so they can prevent more severe caries. The research aimed to determine the effect of the use of educational media on digital animation videos toward the understanding and caring of dental caries. This research used pre experimental design. The population this research was school age children with dental caries. The sample picked up with purposive sampling. The research was conducted by giving intervention using animated digital video for 3 times sessions. Respondents were given pre-test and post to measure understanding of dental caries and caring of dental caries. The result showed there was an effect of the use of digital animation video toward understanding of dental caries and caring of dental caries. Educational media is one of the factors that can support the distribution of information well. Learning media using interactive animation makes children very interested.

## 1 INTRODUCTION

Poor dental health in school-aged children, for example, it can disrupt the growth and development of school age children because pain in cavities can disturb activities and the quality of life of school age children. Teeth and mouth are also a "gateway" for the entry of germs and bacteria so that they can interfere with the health of other organs. Cavities not only affect the quality of life in the presence of pain, but can also cause complications of acute and chronic infections that cause permanent disability and death (Ministry of Health Republic of Indonesia, 2014).

The results of basic health research in 2014 found that the proportion of dental and oral problem populations in children aged 1 to 4 years was 10.4% and only 25.3% of the population received dental care. The correct tooth brushing practice for children aged 1 to 10 years is only 1.7%. Whereas from the percentage of Indonesian population aged > 10 years in correct brushing behavior in East Java province in daily brushing as many as 93.5%, brushing teeth at morning bath 95.2%, taking an afternoon bath 84.0%, after eating morning 2.8%, after waking up

5.1%, before going to bed at night 22.6%, after lunch 9.2%. From the results of dental examinations in Kediri District, the results of 27 children, 22 children (81.5%) experienced dental caries and only 5 children (18.5%) had healthy teeth..

The factors that cause dental caries consist of causes in the internal and external causes of the individual. Factors that cause dental caries are factors that are directly related to the process of dental caries, including host, microorganism, substrate, and time. While external factors are economic status, family, occupation, dental health facilities, and dental health education received (Purwaningsih, 2018).

Dental infections can cause 41 kinds of chronic diseases such as kidney damage, maxillary sinusitis, meningitis, rheumatoid arthritis and even death (Cappelli and Mobley, 2008a). The mechanism of damage caused by dental infections is called focal infection. Chronic infection of the teeth can spread to other parts of the body through the blood circulation (hematogenous) where infective material spreads through the blood circulation and infects other organs. In addition, transmission of infection can also occur through lymphatic and lymphogenic

flow. Infective material travels to the regional lymph into other body organisms or spreads into the jaw bone and connective tissue then accumulates tissue. Transmission can also occur through the gastrointestinal and respiratory tract where infective material is blocked and causes tonsillitis, pharyngitis and various stomach disorders. Aspiration of infective material then causes laryngitis, tracheitis, bronchitis or pneumonia (Cappelli and Mobley, 2008b).

In school children, the body's immune system has not been formed as perfect as in adults. Once a dental infection attacks the organ, the consequences will be fatal. In addition to school-aged children, there are milk teeth that will date and change with adult teeth. The shape and health of adult teeth will depend on the quality of the health of the milk teeth because the perforated milk teeth will leave the bacteria on the gums and infect the roots of future dental candidates so that recurrent dental infections occur (Cappelli and Mobley, 2008b). Dental health education must be introduced as early as possible to children so they can find out how to maintain good and correct dental and oral health.

Visual education animation media is one of the interventions to increase the knowledge of schoolers. In the Health Promotion Model theory concept there are several components that influence such previous experience and personal factors, one of which is knowledge, knowledge factors are the main factors and which are the main components that also influence individual knowledge and perception with the desired end result. In Health Promotion model theory the paradigm shift of health services from curative to promotive and preventive has been responded by nursing theorist Nolla J. Pender focused on the Health Promotion Model (HPM) (Tomme, A.M., & Alligood, 2016). This model combines two theories, namely expectancy theory and social cognitive theory which considers the importance of health promotion (individual characteristics and experience) and prevention of disease is logical and economical. The theoretical approach focuses on the individual's ability to maintain his health condition, better when a person is in good health and also better to take preventive action and then try to take actions that lead to improvement of the conditions he has (Tomme, A.M., & Alligood, 2016). Nurses must also show caring attitudes to help school-age children meet their oral hygienic needs (Nuari et al., 2018). The purpose of this study was to determine the effect of the use of educational media on digital animation

videos toward the understanding of dental caries and the prevention behavior of dental caries.

## 2 METHOD

### 2.1 Research Object

The population this research was school age children with dental caries in Kediri Indonesia. The sample picked up with purposive sampling.

### 2.2 Design/ Approach

The research design used pre experimental design without control.

### 2.3 Data Collection

Data were obtained with questionnaire for knowledge about dental caries and prevention behaviour obtained with check list. The intervention given to the respondent with used video digital animation. The research was conducted by giving intervention using animated digital video for 3 times sessions. Respondents were given pre-test and post test to measure understanding of dental caries and caring of dental caries.

### 2.4 Ethical Consideration

The implementation of ethic feasibility is carried out in accordance with the procedure by conducting ethical feasibility test at the relevant institution. All respondents in this study do inform consent procedurs.

### 2.5 Method of Analysis

Research data were analyzed by descriptive statistic and Bivariate analysis. The data was analyzed by description analysis and Paired T Test. (0,05).

## 3 RESULT

Table 1 shows that 60% of respondents school-age children have female gender and 50% are 6 years old. While the number of school-age children who experience dental pain is 83.3%. Teeth that often experience dental caries in school-aged children are molars as much as 46.7%. The number of teeth that experienced dental caries was 30% with 2 dental

caries. From the data also obtained as many as 50% of children no teeth were released. Table 2 shows that there is an influence of the use of digital animation videos on understanding school-age children about dental caries. Table 3 shows that there is an effect of the use of digital animation videos on the prevention and caring of dental caries.

Table 1: Distribution of Frequency Variable

Variable	Category	F	%
Gender	Male	12	40
	Female	18	60
Age	6 years old	15	50
	7 years old	12	40
	8 years old	3	10
Dental Pain	Ever	25	83,3
	Never	5	16,7
Type of dental caries	Incisors	7	23,3
	Molars	14	46,7
	Canine tooth	2	6,7
	Incisors and molars	7	23,3
Number of carious teeth	1 tooth	7	23,3
	2 teeth	9	30
	3 teeth	4	13,3
	4 teeth	7	23,3
	5 teeth	1	3,3
	6 teeth	2	6,7
Number of loose teeth	none	15	50
	1 tooth	11	36,7
	2 teeth	4	13,3

Table 2: The Analysis Of Variable Understanding Of Dental Caries

No	Understanding about dental caries	N	Mean	SD
1	Pre Test	30	51,6	17,827
2	Post Test	30	75,0	11,962
Paired T Test		P value: 0,000		

Table 3: The Analysis Of Caring Behaviour Of Dental Caries

No	Caring behaviour of dental caries	N	Mean	SD
1	Pre Test	30	4,67	1,708
2	Post Test	30	7,03	1,217
Paired T Test		P value: 0,000		

#### 4 DISCUSSION

From the results of the study, it was found that before the intervention of giving animated videos obtained a mean of 51.6 for understanding school-

age children about dental caries. Matters that are not yet known by respondents include food that results in dental caries, cavities, tooth brushing and dental check-ups. After a pre test examination, a health promotion intervention is then provided with this animated digital video media. In this session nurses also provided Health Promotion by using animated videos about tooth brushing that discussed the effects of not brushing teeth, foods that cause dental caries, and the process of cavities. The second session, which was to re-display the animated video about tooth brushing that discussed how to brush your teeth, when you brushed your teeth and the time to check your teeth. In the third session, the video was started again from the beginning to the end and continued with the practice of brushing teeth. In this third session also conducted post test knowledge and caring behavior. In addition nurses also provide feedback to parents as a reference in guiding children about oral hygiene.

From the results of the study also obtained before the intervention was found the mean of 4.67 for the caring of dental caries includes how to brush teeth correctly and sequentially. After the intervention for the prevention behavior of dental caries has a Mean of 7.03. In conducting health promotion, it cannot be separated from using learning media. When doing health promotion, nurses uses educational visual animation as a learning media. This media must be adjusted to the aggregate of health workers in conducting health promotion. The use of this media in health promotion is also in accordance with the development school children in the cognitive aspects. School age knowledge of the world remains closely related to concrete experiences or perceived feelings. In addition, School children are dominated by what they see, feel and experience (Nuari, 2017). The school-age children have different cognitive abilities (Nuari, 2015a). The application of object or animal recognition application using interactive animation, this provides and presents knowledge about an object in which its use is easy and accompanied by an attractive appearance so that it can helps school age children learn to recognize these objects in their environment. With new learning methods that have sprung up now provide a choice of learning methods that are appropriate to the needs of users. One of them is interactive learning based on information technology that has many advantages from conventional learning methods. Learning media using interactive animation makes children very interested.

Educational media is one of the factors that can support the distribution of information well,

education media is a tool that can be used to convey information. Various media in conducting health promotion such as posters, flipcharts, leaflets and booklets have been proven to increase knowledge. However, the media is less effective if the intended target is school children who in fact have not been able to read and understand the writing to the full. Several studies have found audio media health education methods in animated format to make children learn in a fun way as children watch animated videos at home. The animation format also awakens the world of children's imagination and eliminates boredom because children are made in the same position as watching cartoons. Health education with animated audio visual animation can therefore offer an interesting, not monotonous and informal education according to the characteristics of the way school age children learn. This is not different from the results of the study that the Contextual Teaching And Learning (CTL) models based on visual animation can improve learning outcomes (Nuning Rahayuningsih, Ashadi, 2013). Cognitive abilities are able to influence a person's behavior in doing something and increase self-empowerment (Nuari, 2015b). The school-age children who are independent and have good self-empowerment can improve their behavior in maintaining oral hygiene (Nuari, 2016).

## 5 CONCLUSIONS

Learning media using animated digital video can improve understanding of school-age children about dental caries knowledge. In addition, it can improve the behavior of caring dental caries by showing a positive response by doing healthy living behavior, especially for oral health.

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