

The Effect of Dental Health Education through Leaflet Media on Student's Knowledge

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ABSTRACT

Introduction: The children aged 6-14 years are an age group that is critical for the occurrence of dental caries and has special characteristics, namely the period of replacement of deciduous teeth with permanent teeth. This group has a fairly high prevalence rate of dental caries, reaching 60-80%. In general development, dental caries looks very active at ages 4-8 years and ages 11-19 years. Based on the initial inspection at Hang Tuah 6 Elementary School Surabaya, there were 43 students with DMF-T index amount 4.5 in the high category. And the remaining data was obtained from 37 students, only 2 students were caries free. And it can be seen that the DMF-T index of 8.1 is a problem in this research, namely the high percentage of dental caries in students in 5th and 6th grade at Hang Tuah 6 Elementary School Surabaya in 2023.

Purpose: This study purposes to analyze the relationship between knowledge on dental health education using leaflet media.

Materials and Methods: The sampling technique used in this research is purposive sampling. The criteria for this research sample were students in 5th and 6th grade at Hang Tuah 6 Elementary School Surabaya. Data analysis using a simple linear regression statistical test with the aim of comparing the average results of the pre-test with the post-test in the intervention group, the decision to test the research hypothesis is based on the significant level $< 0,05$.

Results: The characteristic of the respondents who were research subjects included age, gender, and number of students in each class. there is a variable influence of providing education through leaflet media on student's knowledge of dental and oral health Hang Tuah 6 Elementary School Surabaya. The table also explains the magnitude of the correlation/relationship value (R), which is 0.208. From this output, a coefficient of determination (R square) of 0.043 is obtained, which means that the independent variable to the dependent variable is 4,3%.

Conclusions: The effect of dental health education using leaflet media on dental and oral health knowledge among students at Hang Tuah 6 Elementary School, Surabaya in 2023, this is based on a p value of $0.000 < 0.05$, where H_0 rejected and H_a accepted.

KEYWORDS: DMF-T index, student, Dental Health Education

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INTRODUCTION

In 2017, based on World Health Organization (WHO) the prevalence of dental caries is 90% children throughout the world have suffered from dental caries, and majority caries are children aged 6-11 years (25%) and adolescents aged 12 -19 years (59%) even though dental caries is preventable disease. The factors causing the high rate of dental caries in elementary school aged children are environmental, cultural and dental health behavior factors

which is effected by an increase in sugar consumption and make very popular for children. If this is not monitored carefully, it will reduce the child's productivity, because from a biological aspect, pain or loose teeth will be felt so that the child's learning, eating and sleeping activities will be disrupted.¹ The implementation of free carriers The year 2030 in Indonesia is anticipated to present many challenges due to the country's escalating prevalence of dental and oral health issues. According to the Basic Health Research (Riskesdas)

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data from 2013, there was an increase in dental and oral health issues from 25.9% to 57.6% in 2018.² The children aged 6-14 years are an age group that is critical for the occurrence of dental caries and has special characteristics, namely the period of replacement of deciduous teeth with permanent teeth. This group has a fairly high prevalence rate of dental caries, reaching 60-80%. In general development, dental caries looks very active at ages 4-8 years and ages 11-19 years.^{2,3}

Prevention of dental caries can be done before and after tooth eruption. The action taken before teeth erupt is to provide adequate nutrition for pregnant women which is very necessary for the growth and development of teeth during the formation of the enamel matrix and calcification.^{3,4} Other prevention is giving fluoride and help prevent tooth decay or caries. Fluoride can be given through drinking water, table salt, and milk. The easiest and relatively cheap prevention is to brush your teeth regularly and add fluoride-containing toothpaste. This has been proven to reduce the incidence of dental caries by around 15% to 30%.⁵

Based on the initial inspection at Hang Tuah 6 Elementary School Surabaya, there were 43 students with an average DMF-T of 4.5 in the high category. And the remaining data was obtained from 37 students, only 2 students were caries-free. It can be seen that the DMF-T figure of 8.1 is a problem in this research, namely the high percentage of dental caries in students in 5th and 6th grade at Hang Tuah 6 Elementary School Surabaya in 2023. The quantification of the severity of dental caries was defined according to WHO parameters, 1986 (Tab. 1).

Table 1. WHO quantification for the DMFT index

Criteria	Point
Extremely low	0,0 - 1,1
Low	1,2 - 2,6
Standard	2,7 - 4,4
High	4,5 - 6,5
Extremely high	> 6,6

The DMF-T index functions to assess the status of dental and oral health in terms of dental caries in permanent teeth and for primary teeth it is def-t where "d" or decayed (teeth with cavities due to caries), "e" or extraction due to caries, and "f" or filled due to caries. The criteria for calculating average DMF-T or def-t based on WHO is 0,0 - 1,1 = extremely low category; 1,2 - 2,6 = low category; 2,7 - 4,4 = standard category; 4,5 - 6,5 = high category; > 6,6 = extremely high category.⁶

Health promotion is the first and main stage in disease prevention. Health promotion requires a common perception that health promotion is a process that provides health information to the community so that people are willing and able to maintain and improve their health. Community empowerment is a health promotion effort that focuses on the community directly. Community

empowerment is also a process of enabling people to gain greater control over decisions and actions that affect their health, mobilize vulnerable individuals and groups by strengthening their basic life skills, and increase their influence on underlying social and economic conditions.⁷ Community empowerment from the health sector is a method of implementing many health efforts, they are included by individuals, groups, and communities that plan them, in an integrated and sustainable manner to achieve the highest level of community health.^{1,7}

There are four main factors that are influenced by mental health, are environment, behavior, health services, and heredity. Elementary school children are one of the age groups that are vulnerable to dental caries. Children with caries need the most attention because they generally lack knowledge about maintaining their oral hygiene. The children generally like to eat and drink sweets and rarely clean them, so their teeth have a lot of caries or cavities. The main factor that can prevent the occurrence of caries in children is the mother's behavioral factors which can be done by providing education. One form of education is health promotion. Health promotion provided can be carried out using various educational media, one of which is leaflet media. People need to be given information about dental health education using many educational media. Demonstration tools in health education should be prepared based on the principle that the knowledge that exists in every human being is received or captured through the senses. The more senses are used to receive something, the more and clearer the understanding or knowledge obtained. In other words, these visual aids are intended to move as many senses as possible to an object, thus making it easier for a person's perception.^{8,9} This study purposes to analyze the relationship between knowledge of dental health education using leaflet media.

MATERIAL AND METHOD

This research includes quasi-experimental research with a pre-test and post-test group design. This observation to determine changes in knowledge of dental and oral hygiene before and after the intervention with the research subjects are limited to students in 5th and 6th grade at Hang Tuah 6 Elementary School Surabaya. The independent variable and dependent variable are knowledge about dental and oral hygiene before and after dental health education using leaflet media. The instrument used in this research was a leaflet containing material about maintaining dental and oral health. The questionnaire is used to measure the level of knowledge.¹⁰

The sampling technique used in this research is purposive sampling. Purposive sampling is a technique for determining samples with certain considerations. Reasons for using purposive techniques This sampling is suitable for use in quantitative research, or research that does not carry out generalizations. The reason researchers use purposive sampling is to obtain a sample that represents the objectives

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of the research being conducted and meets the criteria for providing information. The sample limit for using the purposive sampling method is students in 5th and 6th grade at Hang Tuah 6 Elementary School Surabaya. The criteria for this research sample were students in 5th and 6th grade at Hang Tuah 6 Elementary School Surabaya. Data analysis using a simple linear regression statistical test with the aim of comparing the average results of the pre-test with the post-test in the intervention group, the decision to test the research hypothesis is based on the significant level $< 0,05$. The results of statistical tests are interpreted and then analyzed and used as results to answer the specific objectives of the research.

RESULT

Based on the research conducted, the following results were :

1. Characteristics Respondent

Table 2. Distribution Frequency of Respondents Hang Tuah 6 Elementary School Surabaya in 2023

No.	Characteristic	Total	
		n	%
1	Age		
	10 years old	48	68,4
	11 years old	22	31,6
	Total	70	100,0
2	Gender		
	Male	29	41,4
	Female	41	58,6
	Total	70	100,0
3	Grade		
	IV A	24	34,2
	IV B	24	34,2
	V A	22	31,6
	Total	70	100,0

Source : Primary data, 2023

The characteristic of the respondents who were research subjects included age, gender, and number of students in each class. According Table 1 is known about 68,4% respondent who have 10 years old and remain 31.6% of respondents who have 11 years old. Majority of respondents are female 58,6%, and amount 31,6% respondents are the student in 6th grade Elementary School, and amount 34,2% are 4th grade.

2. Univariate Analysis

Table 3. Distribution Frequency of Oral Health Knowledge Students at Hang Tuah 6 Elementary School Surabaya in 2023

Variable	Criteria	Intervention			
		Pre Test		Post Test	
		n	%	n	%
Knowledge	Good	28	40,0	60	85,0
	Bad	42	60,0	10	15,0
	Total	70	100,0	70	100,0

Source : Primary data, 2023

Based on table 2, it is known that the level of children's knowledge about maintaining dental and oral health of the students at Hang Tuah 6 Elementary School in 2023 before being given treatment in the form of educational media (pre-test) was in the majority category at less than 60%, as well as in good category of 40%. The majority of students distribution based on knowledge after being treated in the form of educational media (post-test) was in the good category at 85%, likewise in the good category at 15%.

3. Bivariate Analysis

Table 4. Test Results of the Effect of Education through Leaflet Media on Student's Dental and Oral Health Knowledge at Hang Tuah 6 Elementary School Surabaya in 2023

Pre Test Score	Post Test Score				Total		p value
	Good		Bad		n	%	
	n	%	n	%			
Good	28	100,0	0	0,0	28	100,0	0,004
Bad	32	76,2	10	23,8	42	100,0	
Total	60	85,7	10	14,3	70	100,0	

Source : Primary data, 2023

The test was carried out using simple linear regression statistical analysis where the simple linear regression analysis test is a probabilistic model that states a linear relationship between two variables where one variable is considered to influence the other variable. Based on table 3, the measuring instrument used in the Dependent Variable / Variable Y (Knowledge) is a questionnaire measuring instrument with a total of ten questions. The nominal measuring scale used in obtaining scores in the Dependent Variable / Variable Y (Knowledge) in this research is objective criteria categorized into two types including; good, if the score obtained by the respondent is $\geq 50\%$ of the highest total score while poor, if the score obtained by the respondent is $< 50\%$ of the highest total score.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.208 ^a	.043	.031	1.032

a. Predictors: (Constant), Pre test

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.756	1	3.756	3.527	.004 ^b
	Residual	83.044	78	1.065		
	Total	86.800	79			

a. Dependent Variable: Post test

b. Predictors: (Constant), Pre test

Figure 1. Simple Linear Regression Statistical Test Results

The statistic was analyzed using the SPSS version 20.0 for Windows. Based on the results of a simple linear

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regression test, the calculated F value = 3,527 with a ρ value of 0.04 ($\rho < 0.05$), this means that H_0 is rejected and H_a is accepted. Thus, it can be concluded that there is a variable influence of providing education through leaflet media on student's knowledge of dental and oral health Hang Tuah 6 Elementary School Surabaya. The table is explaining the magnitude of the correlation or relationship value (R), which is 0.208. From this output, a coefficient of determination (R square) of 0.043 is obtained, which means that the independent variable to the dependent variable is 4,3%.

DISCUSSION

Based on the results of the analysis as described above, it is proven that dental health education interventions through leaflet media are able to increase knowledge about dental and oral health in elementary school students. Knowledge is a very important domain in shaping one's actions. Measuring knowledge can be done by interviews or questionnaires that ask about the content of the material you want to measure from research subjects or respondent. The knowledge referred to in this research is the ability of elementary school students to answer questions correctly about matters relating to dental and oral health regarding how to brush their teeth correctly, when and how to brush their teeth, and how long it takes to visit the dentist.

Based on the results of the questionnaire, it is known that the average knowledge of 5th and 6th grade of students at Hang Tuah 6 Elementary School Surabaya regarding dental caries is included in the medium criteria. Judging from the respondents' answers, what is least understood is the substance that causes cavities. Meanwhile, dental caries is an infectious disease that damages the structure of the teeth. This disease causes cavities. If not treated, this disease can cause pain, sleep disturbances, tooth loss, infection, various dangerous cases and even death. The cause of disease is consuming sweet and sticky foods, being lazy or brushing your teeth incorrectly. This process can cause tooth decay, starting with the presence of cavities, or what is called caries.⁵

The aim of this education is to provide good information to students, so that there is a significant increase in the number of students who don't know to know about dental and oral health. The measuring instrument used in the Dependent Variable / Variable Y (Knowledge) is a questionnaire measuring instrument with a total of 10 questions. The ordinal measuring scale used in obtaining scores in the Dependent Variable / Variable Y (Knowledge) in this research is objective criteria categorized into 2 (two) types including; Good, if the score obtained by the respondent is 8 to 10 from the highest total score while less, if the score obtained by the respondent is < 8 from the highest total score. Its education through this leaflet media contains information about preventing cavities, the information includes what cavities are, the age at which teeth change (the age at which primary teeth fall out and permanent teeth grow), causes of

cavities, how to prevent cavities, how to brush teeth. the correct one, and recommended toothbrushes and toothpaste.

Based on the results of a simple linear regression test, the ρ value is 0.004 ($\rho < 0.05$), this means that H_0 is rejected and H_a is accepted. Then it can be concluded that there is an influence of educational variables through leaflet media on student's dental and oral health knowledge at Hang Tuah 6 Elementary School Surabaya.

CONCLUSION

The conclusion that can be drawn from the results of the analysis in this research is that there is an influence of dental health education using leaflet media on dental and oral health knowledge among students at Hang Tuah 6 Elementary School, Surabaya in 2023, this is based on a ρ value of $0.000 < 0.05$, where H_0 rejected and H_a accepted.

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