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Tedi's behavior change model as an efforts for brushing teeth behavior in preschool children

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ABSTRACT

Background

Dental health problems in Preschool is higher than primary school, it is because children are not capable of independent activity in brushing teeth. Proper behavior change strategies can be done by providing dental health education by parents and teachers using customized learning methods and media development. Model tedi's behavior change is a learning model brushing teeth in efforts to establish the behavior of brushing teeth with a time of 10 days.

Aim

Tedi's behavior change model of behavior is effective against the formation of preschool children brushing their teeth

Method

Research and Development (R & D) and test the model using quasy experimental pretest and posttest with control group design. Preschoolers research subjects were divided into 2 groups: 1. Intervention tedi's model of behavior change 10 days 2. Model 21-day brushing teeth as controls. The independent variables: tedi's model of behavior change and the dependent variable: behavior behavior brushing teeth (knowledge and action) preschool children. Data were tested using intraclass test correlation coefficient, wilcoxon and man whitney.

Results

Implementation tedi's behavior change model of 10 days to be equally effective with 21 days of brushing teeth models to increase knowledge (p= 0.095) and this model is more effective against the actions of brushing teeth (p= 0.049) than the control group.

Conclusion

Implementation tedi's behavior change model effective against the formation of preschool children brushing teeth.

Keywords: Tedi's behavior change model, Behavior brushing teeth, Preschool children

INTODUCTION

Dental caries in childhood can interfere with mastication system and interfere with the digestive system that can be detrimental to health and child development. Riskesdas in 2018 proved that the prevalence of dental health of children aged 5-6 years by 93% with def-t index of 8.43. Such conditions do not meet the WHO target and FDI is 50% of children aged 5-6 years free of dental caries [1, 2].

One cause of the high prevalence of dental caries for dental health maintenance behaviors are less than the maximum, this is evidenced Indonesia's population had brushed his teeth with the categories of behavior really only reached 2.3% and Central Java provinces at 1.7% [3, 4]. Efforts to prevent the occurrence of dental caries can be done through the behavior of most major dental maintenance and recommended by way of brushing your teeth. That is the simple act of brushing teeth to remove plaque and food debris with a toothbrush and toothpaste, because plaque and leftover food is a major cause of dental caries, therefore, required the establishment of maintenance behavior of oral health from an early age [5, 6].

Early childhood is a "golden age period", meaning the golden period for all aspects of human development, whether physical, emotional and social cognition, where the development of intelligence in this period increased by 50%. Early childhood is the ideal time for a child's motor skills, including brushing teeth, so that will cause a sense of responsibility for the cleanliness of himself [7, 8].

Changes in a child's behavior depends on the ability of adaptation to the stimulus response beyond himself. It fits in the Roy adaptation theory (Sari et al, 2012) suggests that changes in a person's behavior depends on the incoming stimulus and adaptability of the person, that is to say through the right stimulus and the appropriate development of children, will help in entering the next phase of development is well. Behavior can not be learned overnight, but gradually [9, 10].

According to the theory of behavior change (Maher, 2014) states that a person is required to change the habit of a constant period and conditioned for 21 days in order to change the habit [11]. The theory contradicts the results of a preliminary study carried out at the time of job training in early childhood Surya Alam Boyolali, researchers created a behavior change program brushing his teeth with the intervening time of 10 days, with stages: the first 2 days the formation of consciousness which aims to create knowledge, this phase teachers provide stimulus in the form of counseling, simulation and practice consistently brushed his teeth using a variety of instructional media (storage model toothbrushes, posters, videos, pillow book, puzzle kesgi and phantom); 2 days both phases arouse interest with the aim of having the ability to identify the child; 2 days of the third stage of formation the ability to assess (evaluate) aimed at children have the ability to compare; 2 The fourth day is awaken the ability to practice (try) with the purpose of the child has the ability to practice; 2 days fifth forming capability with the goal of adoption children have the habit of brushing your teeth.

Results of a preliminary study of behavior change interventions conducted over 10 days, it is evident that of the 28 children who attend the program, on the first 2 days of the 24 children (85.7%) had knowledge of oral health; 2 The second day of 28 children (100%) have the ability to identify the stages of brushing teeth; 2 day three in 25 children (89.2%) have the ability to compare the true and one relating to the maintenance of oral health; 2 days of the fourth stage of 27 children (96.4%) have the ability to practice how to brush their teeth; and 2 days of the fifth tranche of 28 children (100%) have a habit of brushing their teeth independently. The success of the model is also characterized by a decrease in plaque score, before the intervention of PHP-M score an average of 42 (less good), after a given intervention PHP-M score an average of 14 (very good category).

Stages that researchers do the preliminary study referred to by Rogers behavior change theory which states that a person's behavior changes through five stages, among others, the awareness, interest, evaluation, try and adopt [12], But tRogers through Home Visits identifies no time changes based on the stage. Model of behavior change within 10 days given the name "Tedi's Behavior Change Model". The goal is to create independence preschool children in brushing teeth. This model has the following phases: training of school

teachers and parents, simulation, and evaluation practices

METHODS

The method used in this research is the Research and Development (R & D) with quasy experiment (pre and post-test with control group design). This study aims to develop a learning model of oral health in preschool children. Research and development procedure includes five main steps, as follows: 1) the information collection, 2) design of products / models, expert validation and revision, 4) testing products / models, and 5) the product / model [13, 14].

The sampling technique with purposive sampling teacher training are 54 preschoolers, and then divided into two groups consisting of 27 intervention and 27 control group. Data measurement knowledge and action preschool children brushing teeth done by statistical tests. The research data using a ratio scale so do Shapiro-Wilk normality test.

Statistical tests to analyze the variable data pairs in the intervention group and the control group, when the normal data using a paired t-test, while not normal use wilxocon test. Statistical tests to analyze the comparison between the intervention and control group, when the normal data using independent t-test tests, while not normal using Mann Whitney test

RESULT

Information collection

The results we concluded that the collection of information to establish the independence of preschool children in brushing teeth need for efforts to provide appropriate educational methods and supported a variety of media that can attract attention so that children are able to carry it out.

Design of Products / Model

Data result of the collection of information used to make the product design / model. The results of the collection of information revealed that preschoolers do not yet have independent brushing teeth because of necessary assistance. The researchers create a model tedi's behavior change as brushing teeth formation model behavior for preschoolers.

Validation Expert

Table 1.Uji statistical validity of the expert

	Validity Expert *		
	N	F%	P-value
Relevant	10	100	0.000
Irrelevant	0	0	

** Correlation coefficient intraclass*

The results of the validity of the experts pointed out that the p-value = 0.000, which means tedi's behavior change as a relevant model of dental health education model in preschool children.

Trial Product / Model

Table 2. Test normality intervention group and the control group

variables	Normality test* *p-value*	
	Intervention (n = 27)	Control (n = 27)
Knowledge (pre-test)	0027	0016
Knowledge (post-test)	0000	0002
Act of brushing teeth (pre-test)	0000	0000
Act of brushing teeth (post-test)	0000	0001

** Shapiro-Wilk*

Normality test results showed that p-value 0.05, so it can be concluded that the normal distribution of data is retrieved parametric test.

Table 3. Test Data pairs intervention group and the control group

Group		Knowledge		Action	
		Mean ± SD	p-value	Mean ± SD	p-value
Intervention	Pre-test	5.85 + 1.167	0000	28.63 + 13.63	0000
	Post-test	9:11 + 0.641		98.33 + 2,304	
Control	Pre-test	5.89 + 1.013	0000	32.19 + 17.61	0000
	Post-test	8.63 + 0.926		96.26 + 3108	

* *Wilcoxon*

The test results demonstrate the effectiveness of the data pairs knowledge p-value intervention group was 0.000 (p <0.05), and the p-value control group was 0.000 (p <0.05). Act of brushing teeth showed p-value intervention group was 0.000 (p <0.05), and the p-value control group was 0.000 (p <0.05), meaning that tedi's behavior change model and model brushing teeth 21 days equally effectively increase knowledge and action brushing teeth preschool children.

Table 4. Test data is unpaired intervention group and the control group

Group		Knowledge		Action	
		ΔMean + SD	p-value	ΔMean + SD	p-value
Intervention	Pre-test	3.26 + 1.163	0.095	69.59 + 13.39	0.049
	Post-test				
Control	Pre-test	2,74 + 0,656		63.85 + 16.16	
	Post-test				

* *Mann Whitney*

The effectiveness of the test results demonstrate knowledge of data unpaired p-value between the intervention group and the control group was 0.095 (p>0.05), meaning that tedi's behavior change model and model of 21-day brushing teeth equally effective increase knowledge of preschoolers. While the act of brushing teeth showed p-value between intervention and control groups was 0.049 (P <0.05) means tedi's behavior change model more effective in improving measures of preschool children brushing teeth brushing teeth model than 21 days.

Product Results

Products such as tedi's behavior change model is the output from the learning model development and media for the dental health of preschool children. Implementation tedi's behavior change this model by providing a stimulus undertaken by school teachers and parents.



Figure 1. Module Tedi's Behavior Change Model

DISCUSSION

The collected information can be concluded that to establish the independence of preschool children in brushing teeth need for efforts to provide education methods are appropriate and supported a variety of media that can attract attention so that children are able to do so, in accordance with the opinion of Musyarofah (2017), the provision of education / stimulation in childhood early to be precise and appropriate aspects of child development [15]. The learning model brushing teeth suitable to realize it is tedi's behavior change models. The results of the validity of the experts pointed out that the p-value 0.000, which means tedi's behavior change as a relevant model of dental health education model in preschool children. The validation process is essential expert in the development of products / models in order to produce a product / model useful in improving the quality of education [16]. Appropriate research Sharma (2016), the media will support the process of learning the practice of brushing your teeth [17].

Based on the characteristics of preschool children have not been able to do his own personal hygiene activities including brushing their teeth so they need the help of other people, both teachers and parents [18, 19]. Teachers and parents have a role in the maintenance of dental health behavior, besides that they play an important role in the learning process of a child such as learning to brush his teeth so that school-based dental health program involving teachers and parents effective skills of children brushing their teeth [20, 21].

Teachers and parents are given the training aims to improve knowledge, attitude, dental health maintenance action on the implementation of the model, so it is expected to perform the transfer of knowledge of skills to children. In accordance study Gao et al (2013) model of dental health promotion to preschoolers should emphasize promotion and prevention by involving the role of parents / teachers in the implementation [22].

The results of the effectiveness test knowledge of variable data pairs brushing teeth showed that the p-value was <0.05 means tedi's behavior change mode effectively improve the knowledge and actions of preschool children brushing their teeth. Values increased knowledge of preschool children for over 10 days respondents were given another intervention by counseling with simulation methods brushed his teeth using multiple media learning. To create awareness of children, the first 2 days every day a child is given counseling by watching the video brushing teeth followed by a simulation using a pillow book and puzzle kesgi. Next go 2 days both to create interest in children to be given counseling by simulation method using pillow book and puzzle kesgi and practice brushing teeth.

The initial phase of the samples presented themed film screenings brushed his teeth using audio-visual media. The response of samples in initiating more passion and enthusiasm, which means that the stimulus given to the child succeed. This video media will make the child to concentrate to follow the activities because the two senses are used simultaneously view and hear. Children will understand the messages conveyed through animation moves seen concretely in the video that encourages the birth of a child's emotional response that ultimately children become enthusiastic or motivated to follow the next activity. This is consistent with the theory of behavioral change

Stimulus-Organism-Response (SOR) which says that the different causes behavior changes depending on a given stimulus or stimuli [23]. In accordance with research Sallam (2012) that the audio-visual media can improve dental health knowledge and Sabilillah (2016) audio- visual video can improve dental health maintenance behaviors in children slow leaner [24, 25].

The result of the effectiveness of variable data pairs showed that the intervention group p-value was 0.000 ($p < 0.05$) means tedi's behavior change models effectively enhance the action of brushing teeth preschool children. Act of brushing teeth in the intervention group had increased because of the intervention given by simulations using the media pillow book and puzzle kesgi, demonstration methods using phantom and practice methods of brushing teeth. Using multiple methods can improve the ability of children brushing teeth corresponding indicator researchers stacking purposes. This is in line with research Ruhaena (2015) using a variety of methods to improve the skills of preschool children [26]. In addition to using multiple methods, implementation models also using multi media learning so that children are directly involved in the use of media such as books and puzzles kesgi pillow and possible more senses play a role. The more senses that are used will facilitate the absorption / retention of material, someone who has an understanding of a concept then that person will be easy to practice. Practice brushing teeth done consistently for 10 days ie brushing teeth in the morning after the break, accompanied by teachers and night with the assistance of parents has brought significant changes in the intervention group. According to the theory of behavior change reveals to change one's habits, we need a constant period [11].

The results of the effectiveness test data is not paired actions brushing his teeth in the intervention group and controls 0.049 ($p < 0.05$), meaning that tedi's behavior change model more effective in improving measures of preschool children brushing their teeth than brushing teeth models 21 days. In the intervention group effectively improve children brushing their teeth due to excess tedi's behavior change models provide much stimulus in the learning process, the implementation is carried out involving teachers and parents and children directly involved in demonstrating itself to brush their teeth properly. Supported also by the facility toothbrush storage model contained in the intervention group, every child has a toothbrush and toothpaste and mouthwash glasses personal storage so that children are easier to take and store a toothbrush without the help of others. Support facilities is one success in school dental health program. Research Hayat (2013) factors that affect the success UKGS are facilities / health-care facilities [27, 28].

CONCLUSION

From the research, it could be summarized that tedi's behavior change modules have been proven effective brushing teeth shape behavior (knowledge and action) preschool children.

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