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Effectiveness of "Heni's Dental Flannel Book" On Improving Dental Health Care among Early Childhood

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Abstract. Knowledge is one factor associated with dental caries that impact awareness among children to maintain dental hygiene. The innovation and development of media "Heni's Dental Flannel Book were developed to improve children's knowledge. " The study aimed to develop and to examine the effect of Heni's Dental Flannel Book on improving dental health care among children. Research and Development (R & D) was applied in this study, consisting of information gathering, design models, and validation experts. The product trial was conducted with quasi-experiment, pre-test and post-test, modification, application trial (quasi-experimental, pre-test, and post-test with non-equivalent control group design, final product revision, production of a product. Data were tested using ANOVA. Shapiro Wilk, Wilcoxon test, Mann-Whitney test also was used to analyze the data. The results found that "Heni's Dental Flannel Book" is useful to increase dental and oral health care for childhood in education Programs. The results also showed that the positive effect of the program on knowledge (p-value<0.000) and attitude (p-value <0.000) among children. There is a difference in the effectiveness of smart dental books and flipchart in increased dental and oral health care for children with a p-value of <0.000. "Heni's Dental Flannel Book" effectively improve children's knowledge and attitudes.

Keywords: children, Education Programs, dental health care.

INTRODUCTION

Good oral health can be defined as the fit of the dental and oral cavities. Healthy oral is free from oral diseases, throat cancer, mouth sores, periodontal/gum tissue diseases, and disorders in biting, chewing, speaking, and psycho-social well-being that can interfere with daily life activities[1]. Caries is most commonly found among pre-school children. Disorders of dental and oral diseases may affect the health of children. Adverse effects of caries, such as difficult to chew, decreasing of appetite, weight loss, difficulty sleeping, changes in motivation, and not attending school [2, 3]

Although not all disorders can reduce the quality of life among children, it is necessary to establish caries prevention in a dental health program [4]. Dental and oral diseases are associated with several factors, including physical and social, individual lifestyles, behavior, socioeconomic factors, and access to health care services [5]. The behavioral factor was the most significant factor affecting dental and oral health problems among children (6-7]. Children with a lousy attitude towards dental hygiene, cariogenic food diet, and children's oral health were at risk of caries. Lack of knowledge of oral health without carrying out a cariogenic diet of sugar-free food was also identified to have higher caries. Besides that, knowledge, attitudes, and actions could the significant factors affecting health among children as well as parental behavior on recognizing the healthy food among children [8]

Parents had responsible for supporting oral health behavior among children by educating and supervising brushing teeth and dental care [9]. Lack of knowledge to maintain dental health could affect low awareness to support dental hygiene. Therefore, promoting dental and oral health for children should be applied to prevent dental caries among children [11-13]

Early Childhood Education Program is an educational effort for children aged 0 to 6 years [14] since this period is the golden age. Therefore, education-based playing approaches could improve the best ability for receiving information from the education process playing [15]. By this process also may enhance the capability among children on critical thinking in learning [16]

Increased knowledge, attitudes, and actions to maintain dental and oral hygiene are carried out through dental health education. The behavior change indicates the achievement of a dental and oral health education process. Changes, knowledge of skills, attitudes, and behaviors in oral health. Factors that influence the educational process include the environment, students, educators, educational methods, and learning media [17]

Learning media can convey messages to students in the form of communicative tools to grow the children's attention, interest, and mind to participate in teaching activities well. Learning media is something fundamental in the teaching and learning process. Without appropriate learning media, the learning objectives will not be achieved by the dental and oral health education process indicated by behavior changes. Changes, knowledge of skills, attitudes, and behaviors in oral health. Factors that influence the educational process include the environment, students, educators, educational methods, and learning media [18]

At present, one of the developing learning media is a busy book. In this book, some activities match shapes, attach buttons, and sew. Usually, the active book learning media is given to children aged six months to pre-school. This Bus book contains simple games that can stimulate children's fine motor skills. Dental health education media will be more successful if given with something right and appealing to children so that children easily accept the material delivered [19]

One strategy to overcome the problem of dental caries among early childhood by promoting oral health. The media Heni's Dental Flannel Book book is an innovation to support their education process modified from Risa's study. The media comprises dental and oral material, including good habits, children's bad habits, dental puzzles, and brush teeth.

METHOD

Research and development (R&D) was applied in this study to develop media innovation for children. The method consisted of gathering information, design models, expert validation of the model, product trial, application trial, final product revision, and production of the product. Information gathering, comprised of identifying and analyzing problems experienced during program implementation. The strategy was conducted by observing and interviewing with the Department of Health, Dental Nurses, and teachers.

The result data from information gathering is used to design the "Heni Dental Flannel Book" media that is adapted to the needs of learning methods and media for children. An expert validation tested the feasibility of the product before implementing it to the public. Three experts, such as health promotion experts, media experts, and early childhood education program experts, carried out internal testing. By distributing questionnaires, data collection techniques make revisions to using the media "Heni Dental Flannel Book." This process was conducted to produce a suitable product/model.

Then, the

product trial is carried out by applying the product design in real conditions. Design testing using pre-experiment with one group pre-test post-test, a sample of 15 children. Revisions are made if the initial test results do not meet the expected specifications, so there need to be revisions. The results of the next revision are used for the application trial.

The application trial is carried out by using the product in a real field. Design testing using a Quasi-experiment with pre-test and post-test non-equivalent control group design, a sample of 40 children. The final product revision is carried out after the application trial if there are deficiencies or do not meet the desired specifications, then a product improvement is needed. The product in the form of media "Heni Dental Flannel Book" is the output of learning methods and dental health media in Early Childhood Education Programs.

Statistical test to analyze paired variable data in the intervention group and the control group, normality test using *Shapiro-Wilk*. If the data is normal, use the *paired t-test*, whereas it is not normal using the *Wilcoxon test*. Statistical test to analyze the comparison between the intervention group and the control group, if the normal data use an independent t-test, while it is not customary to use the *Mann Whitney test*.

RESEARCH RESULT

A. Information Collection

The results of gathering information concluded that early childhood characteristics, in general, are still happy to play, love to work in groups, and like to feel/do something directly. Therefore, it is necessary to develop dental health education media that contains the game elements to enable students to actively study in groups and provide students with opportunities to be directly involved in learning.

B. Design Products / Models

The findings in the field-collected at the preliminary stage of the researchers designed and developed products in the form of dental health education media that can help overcome problems in implementing dental health education for early childhood education. This "Here's Dental Flannel Book" contains material including the characteristics of healthy teeth, various forms of teeth, due to not brushing teeth, children's good habits about children's dental and oral health, bad habits, children's puzzles, and how to brush their teeth correctly.

C. Expert Validation

Table 1. Results of expert validation on "Heni Dental Flannel Book."

No	Expert	Skor
1	Media Expert	92
2	Health Promotion Expert	74
3	Early Childhood Education Program Expert	90

Table 1 described the results of expert validation. Based on the assessment results from found that the feasibility score was 85.33%. It was indicated that the media was feasible to implement and tested by the product.

D. Trial Product

Table 2. Testing for normality of data

Normality test	
Variable	**Intervention**
Knowledge (pre-test)	0.006
Knowledge (post-test)	0.004
Attitude (pre-test)	0.013
Attitude (post-test)	0.003

**Shapiro-Wilk*

The findings showed that all variables were usually distributed with a p-value <0.05. Therefore, the appropriate data analysis should be applied for the non-parametric test.

Table 3. Testing for the effectiveness of the program on knowledge among children

Group	**Paired Data Test**				
		N	**Mean**	**SD**	**p-value**
Intervention group	Pre-test	15	60.87	0.743	0.001
	Post-test	15	90.20	0.941	

**Wilcoxon Signed Ranks Test*

The pairwise data effectiveness test results showed that the value of the intervention group's p-value was 0.001 (p <0.05). It was indicated that there was a difference in knowledge before and after receiving the Heni's Dental Flannel Book.

Table 4. The effectiveness of the program on Attitude among Children

Group	**Paired Data Test**				
		N	**Mean**	**SD**	**p-value**
Intervention	Pre-test	15	20.73	1.033	0.001
	Post-test	15	40.27	0.704	

**Wilcoxon Signed Ranks Test*

The results showed that children's attitude was higher after receiving Heni's Dental Flannel Book than before receiving the program (p <0.05.

E. Trial Use

The quasi-experimental study, pre-test, and post-test with non-equivalent control group design were applied to examine the program's effect on health outcomes. We divided the sample intervention group (n=20) and the control group (n=20). The description of the results as follows

Table 5. The characteristic of respondents among the intervention group and the control group

Variable	Intervention		Control		p-value
	N	(%)	N	(%)	
Gender Man	15	75	13	65	0.104
Women	5	25	7	35	
Parents' Education Elementary school	0	0	0	0	0.630
Junior high school	2	10	2	10	
High school	7	35	6	30	
Bachelor	11	55	12	60	
Parents' job Civil servants	8	40	4	20	0.079
Private employees	4	20	7	35	
entrepreneur	6	30	6	30	
Etc	2	10	3	15	

**Anova*

Based on the table above, the frequency distribution of early childhood based on sex shows that the largest percentage is 75% (15 children) male sex. The frequency of early childhood based on parental education, the largest percentage is 55% (11 parents), Bachelor. Early childhood frequency is based on parents' work; the highest percentage is 40% (8 parents) of civil servants in the intervention group. The homogeneity test results show that the p-value> 0.05, so it can be concluded that the two sample groups' variants are the same.

Table 6. Data Normality Test of the Intervention and Control Group for Children of Early Childhood Education Programs

Variable	Normality test	
	P-Value	
	Intervention	Control
Knowledge (pre-test)	0.001	0.000
Knowledge (post-test)	0.001	0.011
Attitude (pre-test)	0.000	0.019
Attitude (post-test)	0.000	0.008

**Shapiro-Wilk*

The normality test results show that the p-value is <0.05, so it can be concluded that the data are not normally distributed, then the non-parametric test is continued.

Table 7. Test of Effectiveness of Knowledge of Intervention Groups and Control Groups in Early Childhood Education Programs

Group	Paired Data Test					Unpaired Data Test		
		n	Mean	SD	p-value	Δ Mean	SD	p-value
Intervention	Pre	20	6.80	0.768	0.000	2.050	0.896	0.000
	Post	20	9.00	0.725				
Control	Pre	20	6.20	1.152	0.180	0.15	0.489	
	Post	20	6.35	1.226				

**Wilcoxon Test* *Mann-Whitney Test*

The results of the effectiveness of paired data showed that the value of the intervention group's p-value was 0,000 (p <0.05), meaning "Heni's Dental Flannel Book" effectively increased children's knowledge. The control group's p-value is 0.180 (p> 0.05), meaning that the flipchart media is ineffective in improving children's understanding.

The results of the effectiveness of unpaired data showed that the value of the intervention group and the control group was 0,000 (p <0.05), which meant that "Heni's Dental Flannel Book" was more effective in increasing children's knowledge compared to the flipchart media.

Table 8. Test of Effectiveness of Attitudes of Intervention Groups and Control Groups in Early Childhood Education Programs

Group	Paired Data Test					Paired Data Test		
		n	Mean	SD	p-value	Δ Mean	SD	p-value
Intervention	Pre	20	2.80	0.834	0.000	1.50	0.889	0.000
	Post	20	4.30	0.733				
Control	Pre	20	2.65	0.988	0.180	0.15	0.489	
	Post	20	2.80	0.894				

The effectiveness of paired data test results showed that the value of the intervention group was 0,000 (p <0.05), meaning "Heni's Dental Flannel Book" effectively improved the child's attitude. The control group's p-value is 0.180 (p> 0.05), which means that the flipchart media is not effective towards enhancing children's perspectives.

The results of the effectiveness of unpaired data showed that the value of the intervention group and the control group was 0,000 (p <0.05), which meant that "Heni's Dental Flannel Book" was more effective in improving children's attitudes compared to flipchart media.

F. Product Production

The product in the form of "Heni's Dental Flannel Book" is the output of learning methods and dental health media. Implementation of the "Heni's Dental Flannel Book" in improving oral and dental health maintenance requires parents or teachers' assistance.

DISCUSSION

The information-gathering results concluded that to increase children's knowledge and attitudes in the maintenance of Early Childhood Education Programs, dental health needed special efforts. It supported learning media that involve children in carrying out it. Unlike the other phases of the child's age, early childhood has distinctive characteristics.

Early childhood has a high curiosity; children often install everything to fulfill their interests. So learning while playing is the right method for early childhood [(20)]. The suitable media to achieve this is the “Heni’s Dental Flannel Book” to improve the maintenance of children's dental and oral health.

The expert validator's assessment results revealed that the feasibility score was 85.33% with a very feasible category so that the media for “Heni’s Dental Flannel Book”Heni" was relevant as a medium for children in Early Childhood Education Programs of dental health education. The expert validation process is critical to assess the feasibility of the basics of the concept, the theory used, and the feasibility of a product. Experts or mentors carry this feasibility test or mentors who have extensive experience and insight in their fields[(21)].

Komala (2014) states that good health promotion media is if the media can provide information following the goals. The message to be conveyed can be received by the target so that it can change its behavior. The media can be adjusted by how many targets and vulnerable the target group [(22)]. According to Fatmasari (2017), discussions in small groups are more effective in improving dental hygiene than large groups[(23)].

The use of "Heni Dental Flannel Book" is done to increase knowledge and attitude to maintain dental and oral hygiene. Knowledge is the result of knowing after people have sensed a specific object. Simultaneously, the attitude is a response or reaction of someone who is still closed to the object and stimulus. Attitude is a readiness to act on objects and an appreciation of objects. Attitudes do not reflect an activity or action but an attitude forming for an action to occur[(24)].

The results of the paired data effectiveness test showed that the value of the intervention group was 0,000 ($p < 0.05$), meaning “Heni’s Dental Flannel Book” effectively increased children's knowledge and attitudes. The control group's p-value is 0.180 ($p > 0.05$), meaning that the flipchart media is ineffective in improving children's knowledge and attitudes.

According to Edgar Dale, who is described through 'Cale Experience Dale,' the process of education by involving more senses will be more readily accepted and remembered by the educational goals [(25)]. The provision of health education will be more effective, and the results will be optimal when using appropriate health education methods and media and involving more senses[(26)].

The results of the effectiveness of unpaired data showed that the value of the intervention group and the control group's p-value was 0,000 ($p < 0.05$), meaning that the "Dental Flannel Book Heni" was more effective in increasing children's knowledge and attitude compared to flipchart media. This is because the “Heni’s Dental Flannel Book” is carried out by playing methods in small groups, and children are directly involved in the use and use of various sensory devices such as vision, hearing, and touch. Whereas flipcharts only involve two senses, namely the sense of sight and hearing. Flipchart is a medium that is often used in dental health education. The media began to be considered less attractive. Providing health education will look impressive if it is delivered with exciting media as well.

CONCLUSION

“Heni’s Dental Flannel Book” is sufficient to improve the knowledge and attitude among the children. “Heni’s Dental Flannel Book” is also useful as an effort to enhance the maintenance of dental and oral health for children in Early Childhood Education Programs.

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