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Trifold Display Board 3D As An Effort To Improve Knowledge And Brushing Skills for Early Childhood

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ABSTRACT

A common dental and oral health problem is dental caries. The results of Riskesdas (2018), showed that children aged 5 years had a dental caries experience rate (DMF-t) ≥ 6 of 67.3%. The target of the Indonesian Ministry of Health is caries-free by 2030. Efforts to prevent dental and oral diseases are carried out through promotional and preventive services, through dental health education with various methods and media that are fun, entertaining and attract attention, and can help and accelerate the process of understanding children's material substantiation. The aims of this research is to produce a media Trifold Display Board 3D bagi anak usia dini. The methods of this research is using quasi-experiment with pre-posttest design and statistical test used is wilcoxon test. The results in the poster group of knowledge research results p value 0.275, for skills p value 0.096 both showed results $p > 0.05$, In the Poster Media group the change in values existed but did not show significant results in influencing knowledge and skills. In the 3D Trifold Display Board group, the results showed that both had a p value of 0.000 ($p < 0.05$). The development of a *Trifold Display Board 3D* media application and effectively improves the dental health maintenance behavior of public elementary school early childhood so that it can be an alternative problem-solving in improving the dental health maintenance behavior of elementary school early childhood.

Keyword : Media Trifold Display Board 3D; Knowledge; Skills; Brushing Teeth

Introduction

Common dental and oral health problems are dental caries and periodontal disease. Dental caries is a demineralization process caused by bacteria in plaque that attack the enamel, dentin and cementum layers. Dental caries, which often occurs in early childhood, called early childhood caries (ECC), is a disorder of hard dental tissue that attacks milk teeth at pre-age. The impact of dental caries disease is that more than 50 million hours per year are lost due to children not attending school, it affects intellectual and decreased child achievement.^[1]

World Health Organization (WHO) data shows that 90% of children have caries, the ECC prevalence of children aged 5-6 years in Indonesia is 90.05%. This figure is still very far from expectations when compared to the WHO target

which declares that in 2020 the DMF-T value of children is 1 and the target of the Indonesian Ministry of Health to be caries-free by 2030.^[2]

Various preventive programs are carried out to restrain the rate of development, reduce the prevalence and incidence of dental and oral diseases. In Indonesia, efforts to prevent dental and oral diseases of early children are carried out through school dental health efforts (UKGS) and community dental health business programs (UKGM) which are integrated in the integrated service post (POSYANDU) activities of Puskesmas. UKGS and UKGM provide promotive and preventive services that are carried out once a year with the aim of improving people's dental and oral health optimally.^[3]

The UKGS and UKGMD programs launched by the government have not yielded results, it is

proven that no single country is free from dental caries.^[4] The Indonesian population who experienced dental health problems was 57.6%, only 10.2% received medical services. Indonesians aged 3 years and over, who already have the correct brushing behavior frequency and time only by 2.8%. Children aged 5 years have a ≥ 6 dental caries (dmft) experience rate of 67.3% (included in the severe early childhood caries (S-ECC) category).^[4]

Various preventive programs are carried out to restrain the rate of development, reduce the prevalence and incidence of dental and oral diseases. In Indonesia, efforts to prevent dental and oral diseases of early childhood are carried out through school dental health efforts (UKGS) and community dental health business programs (UKGM) which are integrated in the integrated service post (POSYANDU) activities of Puskesmas. UKGS and UKGM provide promotive and preventive services that are carried out once a year with the aim of improving people's dental and oral health optimally.^[5]

The UKGS and UKGMD programs launched by the government have not yielded results, it is proven that no single country is free from dental caries.^[3] The high number of dental and oral health problems is influenced by internal and external factors. Internal factors include 1) hosts, namely physical, biological, and social conditions. 2) agents, namely streptococcus mutans bacteria, and 3) environmental, which is the quality of drinking water used by the community. An external factor is the behavior of maintaining the health of the teeth and mouth. According to Notoadmojo year (2012), behavior has an influence of 30%-35% on the degree of health.^[6]

Behavior is a person's reaction to a problem received from the outside, which has a realm of knowledge, attitudes, and actions. The previous researchers previous researchers proved that the improvement of knowledge, attitudes and skills has an effect on the hygiene status of children's teeth and mouth. Both studies proved that the behavior of maintaining dental and oral health affects a person's actions to maintain healthy teeth and mouth, therefore efforts are needed to form behaviors from an early age.^[7]

Efforts to change the behavior of maintaining dental and oral health can be done through dental health education with various methods and media that are fun, entertaining and attract attention, to avoid boredom in children. Interesting educational media can help and speed up the process of understanding children's activities of material

content. Dental health education media is adjusted to the target characteristics of game-based dental health education (gammificasy, Community culture, audio visual and edu tour).^[8]

Types of learning media are classified into audio, visual, audio-visual, presenter, object media and computer-based interactive media. The presenting media consists of seven groups, namely: graphic groups, print materials and still images, still projection media groups, audio media groups, visual media audio groups, live image or film media groups, television media groups, multimedia groups.^[9]

One of the interesting media that needs to be introduced to early childhood is the Trifold Display Board 3D as an effort to increase knowledge and teeth brushing skills for early childhood, which is a poster that has parts that can move or have 3-dimensional elements and provides interesting visualizations of stories, starting from the display of images that can move when the page is opened⁹. Therefore Trifold Display Board 3D as an effort to improve the knowledge and skills of brushing teeth for early childhood.

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Methods

The research method used is quasi-experimental with a pre-post test design and the statistical test used is the Wilcoxon test. Respondents will be given counseling with 3D Trifold Display media for 21 days. On the first day, a pretest will be carried out for 15 minutes and then counseling for 45 for 21 days. On the last day, an evaluation was carried out in the form of a posttest of respondents. This research had a population of The sampling technique uses Slovin technique with results 74 In anticipation of the event that the respondent will dropout, the number of samples was 10%, bringing the number of samples to 84 early childhood. the minimum number of respondents in each group of both intervention and control groups was 42. Each participant who agreed signed the informed consent. Participant has the right to withdraw. The researcher got approved to conduct the study from the committee ethic of Poltekkes Kemenkes Medan 01.2014/KEPK/POLTEKKES KEMENKES MEDAN 2021.

Results and Discussion

Table 1
Knowledge Frequency Distribution on the Trifold Display Board 3D group

Knowledge Criteria	f	%
Bad	2	8,6
Medium	1	0,0
Good	9	1,4
Total	2	100

Based on the table above shows that the percentage of knowledge before in the *Trifold Display Board 3D* group of 42 early childhood, who have knowledge with a bad category of 12 people (28.6%), medium 21 people (50.0%) and a good category of 9 people (21.4%).

Table 2
Knowledge Frequency Distribution after in the Trifold Display Board 3D group

Kriteria Pengetahuan	f	%
Buruk	-	-
Sedang	0	23,8
Baik	2	76,2
Jumlah	42	100

Based on the table above shows that the percentage of knowledge after in the *Trifold Display Board 3D* group of 42 earlychildhood, who have knowledge with a bad category does not exist, is 10 people (23.8%), and the Good category is 32 people (76.2%).

Table 3
Frequency Distribution Of Skills Before in The Trifold Display Board 3D Group

Skills Criteria	f	%
Unskilled	18	42,9
Skilled	24	57,1
Total	42	100

Based on the table above, it shows that the percentage of skills before in the *Trifold Display Board 3D* group of 42 earlychildhood, who have skills with the unskilled category is 18 people (42.9%), and the skilled category is 24 people (57.1%).

Table 4
Skill Frequency Distribution after in the Trifold Display Board 3D group

Skills Criteria	f	%
Unskilled	-	-
Skilled	42	100
Total	42	100

Based on the table above, it shows that the percentage of skills after in the *Trifold Display Board 3D* group of 42 early childhood, who have skills with a bad category do not exist, and the skilled category is 42 people (100%).

Table 5
Distribution of The Frequency of Knowledge Before on the Poster group

Knowledge Criteria	f	%
Bad	10	23,8
Medium	20	47,6
Good	12	28,6
Total	42	100

Based on the table above shows that the percentage of knowledge before in the poster group of 42 early childhood, who have knowledge with a bad category of 10 people (23.8%), medium 20 people (47.6%) and the Good category 12 people (28.6%).

Table 6
Distribution of Knowledge Frequency after in the Poster group

Knowledge Criteria	f	%
Bad	3	7,1
Medium	24	57,1
Good	15	35,7
Total	42	100

Based on the table above, it shows that the percentage of knowledge after in the pster group of 42 early childhood, who have knowledge with a bad category of 3 people (7.1%), medium 24 people (57.1%) and the Good category 15 people (35.7%).

Table 7
Distribution of Skill Frequencies before on poster groups

Skills Criteria	f	%
Unskilled	11	26,2
Skilled	31	73,8
Total	42	100

Based on the table above, it shows that the percentage of skills before in the poster group of 42 early childhood, who have skills with the unskilled category of 11 people (26.2%) and the skilled category of 31 people (73.8%).

Table 8
Frequency Distribution of Skills after in the Poster group

Skills Criteria	f	%
Unskilled	6	14,3
Skilled	36	78,6
Total	42	100

Based on the table above, it shows that the percentage of skills after in the poster group of 42 early childhood, who have attitudes with the unskilled category is 6 people (14.3%), and the skilled category is 36 people (78.6%).

Tabel 9
The Effectiveness Of Using The Trifold Display Board 3D And Posters As An Effort To Increase Brushing Knowledge For Early Childhood

Media	Knowledge		π Rank	Z Score	P
	Before	After			
Trifold Display Board 3D	0,93	,76	5,50	5,152	0,000
Poster	0,05	1,17	11,00	1,091	0,275

Based on the results of the *Wilcoxon* test, the Significance numbers show the numbers 0.000 and 0.275. Because the p value of $0.000 < 0.05$, it can be concluded that the knowledge before and after the use of the 3D Display Board trifold media has a significant relationship, meaning that the use of the 3D display board trifold is effective in influencing early childhood knowledge as an effort to increase toothbrushing knowledge, while early childhood who uses poster media shows a p value of 0.275, Because the P value > 0.05 , it can be concluded that knowledge before and after the use of posters does not have a significant relationship, meaning that the use of posters does not affect early childhood knowledge as an effort to increase knowledge of brushing teeth for early childhood children.

Tabel 10
The Effectiveness Of Using Trifold Display Board 3D And Posters As An Effort To Improve Brushing Skills For Early Childhood

Media	Skills		Rank	Z Score	P
	Before	After			
Trifold Display Board 3D	0,57	1,00	9,50	4,243	0,000
Poster	0,74	0,86	5,00	1,667	0,096

Based on *wilcoxon* test results, the Significance numbers show the numbers 0.000 and 0.096. Because the p value of $0.000 < 0.05$, it can be concluded that the cognition before and after the use of 3D Display Board trifold media has a significant relationship, meaning that the use of 3D trifold display boards is effective in affecting early childhood skills as an effort to improve teeth brushing skills, while early childhood children who use poster media show a p value of 0.96, because the value of $p > 0.05$, it can be concluded that the skills before and after the use of posters do not have a significant relationship, meaning that the use of posters does not affect early childhood skills as an effort to improve teeth brushing skills for early uses children.

Based on the results of univariate analysis, it shows that the percentage of knowledge before the Trifold Display Board 3D group of 42 early childhood children, who have knowledge with a bad category of 12 people (28.6%), a medium of 21 people (43.3%) and a good category of 9 people (21.4%) after using the Trifold Display Board 3D. those with knowledge with the bad category are absent, while 10 people (23.8%) and the Good category are 32 people (76.2%). The value is that there is a change, before there were early childhood who had bad knowledge after using the 3D Trifold Display Board, no more early childhood had bad knowledge, and more and more early childhood had good knowledge.

The percentage of skills before in the Trifold Display Board 3D group of 42 early childhood, who had skills with the unskilled category of 18 people (42.9%), and the skilled category of 24 people (57.1%). after using the Trifold Display Board 3D who had skills with the category of unskilled did not exist and the skilled category of 42 people (100%). The value has changed, previously there were early childhood children who were not skilled in brushing their teeth after using the Trifold Display Board 3D, there were no more early childhood who were not skilled in brushing their teeth and all early childhood children were skilled in brushing their teeth, namely as many as 42 people (100%).

The percentage of knowledge before in the Poster group of 42 early childhood, who had knowledge with a bad category of 10 people (28.8%), moderately 20 people (47.6%) and the Good category of 12 people (28.6%). after using posters that had knowledge with a bad category of 3 people (7.1%), a medium of 24 people (57.1%) and a good category of 15 people (35.7%). The value has changed slightly, previously there were 10 early

childhood children who had poor knowledge after using posters, there were still early children who had knowledge with a bad category, namely 3 people (7.1%), for knowledge with moderate and good categories each experienced a decrease of 3-4 people from before using posters in increasing the knowledge of brushing teeth in early childhood.

The percentage of skills before in the poster group of 42 early childhood, who had skills with the unskilled category was 11 people (26.2%), and the skilled category was 31 people (73.8%). after using posters who had skills with the unskilled category of 6 people (14.3%) and the skilled category of 36 people (85.7%). The value has changed, but there are still skills found with the category of not being skilled in brushing teeth in early childhood after using posters.

The development of technology today is developing very rapidly and entering all aspects of life. The information system is currently in the era of digitalization which has changed oral traditions to digital traditions.^[10] The development of information and communication technology today is always accompanied by the word "borderless" or borderless. The convenience presented by the available social media is able to eliminate the distance and time that exists. information from anywhere can be directly accessed.^[11]

Efforts to change the behavior of maintaining dental and oral health can be done through dental health education with various methods and media that are fun, entertaining and attract attention, to avoid boredom in children. Interesting educational media can help and speed up the process of understanding children's activities of material content. Dental health education media is adjusted to the target characteristics of game-based dental health education (gamification, Community culture, audio visual and *edu tour*).^[12]

Types of learning media are classified into audio, visual, audio-visual, presenter, media objek and media interactive berbasis computer. The presenting media consists of seven groups, namely: graphics group, print materials and still images, group of still projection media, group of audio media, group of audio visual media, kgroup of live image media or film, kgroup of television mediai, group of multimedia.^[13]

One of the interesting media that needs to be introduced to early childhood is the Trifold Display Board 3D as an effort to increase knowledge and teeth brushing skills for early childhood., which is a poster that has parts that can move or have 3-dimensional elements and provides interesting

visualizations of stories, starting from the display of images that can move when the page is opened[14] Therefore, Trifold Display Board 3D as an effort to improve knowledge and teeth brushing skills for early childhood.

In accordance with this study based on the results of *bivariate* analysis that based on the results of the *Wilcoxon* test, the Significance number shows a figure of 0.000. Because the p value of < 0.05 , it can be concluded that knowledge before and after the use of the 3D Trifold Display Board has a significant relationship, meaning that the use of the 3D Trifold Display Board effectively affects the knowledge of early childhood brushing, while the skill shows a p value of 0.000, because the p value < 0.05 , it can be concluded that skills before and after the use of the Trifold Display Board 3D has a significant relationship meaning that the use of the Trifold Display Board 3D affects early childhood brushing skills.

Based on the results of *the Wilcoxon* test, the Significance number shows a figure of 0.275. Because the p value of > 0.05 , it can be concluded that knowledge before and after the use of posters does not have a significant relationship, meaning that the use of posters is not effective in affecting the knowledge of brushing teeth in early childhood, while skills show a p value of 0.096, because the p value of > 0.05 , it can be concluded that the skills before and after the use of posters have an insignificant relationship, meaning that the use of posters does not affect the use of posters. early childhood brushing skills.

From the analysis, the use of 3D Trifold Display Boards in early childhood is effective in increasing the knowledge and skills of brushing teeth, while the use of posters is not effective in increasing knowledge and skills of early childhood. Trifold Display Board 3D is a poster board that has moving parts or has 3-dimensional elements and provides interesting visualizations of stories, starting from the display of images that can move when the page is opened. The advantages of Trifold Display Board 3D can make it easier for early childhood to learn comfortably and happily, because Trifold Display Board 3D is a poster board, and Trifold Display Board 3D also combines hands and eyes, action and reaction as well as discovery and curiosity or curiosity. Activities that appeal to early childhood can spur memory. Children of age can be motivated to learn because it makes an impression in the learning, so that early childhood will continue to remember the material taught using interesting pop up book media[15].

Conclusion

There was an improvement in terms of early childhood knowledge, attitudes and skills ($p < 0.000$, < 0.05) after intervention using 3D trifold display board media. This proves that Trifold 3D Display media is effective for improving early childhood behavior in brushing teeth.

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