ISSN No:-2456-2165

The Potential of Led (*Dental Lamp Education*) as an Alternative Media for Improving Behavior of Tooth and Mouth Health Maintenance in Elementary School Children (*Systematic Literature Review)*

Kurnia Erma Puri, Prof. drg. Diyah Fatmasari MDS.c*, Dr. drg. Supriyana, M.Pd**, Dr. Bedjo Santoso, S. SiT. M. Kes***, Tri Wiyantini, SKM (Epid)* ***
Ministry of Health Polytechnic Postgraduate Program Semarang

Abstract:- Dental and oral health problems that are most commonly found in elementary school children are dental caries. Dental and oral health problems are caused by behavior in maintaining dental and oral health. Behavior change can be done through Oral Health Education. The application of AR-based LED media can improve the dental and oral health maintenance behavior of elementary school children. The purpose of *the literature review* is to describe an intervention that utilizes the potential of LED (*Dental Lamp Education*) media as an alternative medium for improving the dental and oral health maintenance behavior of elementary school children.

This study uses *a systematic literature review* (SLR), which is a synthesis of the results of a systematic, clear, comprehensive literature study by identifying, analyzing, evaluating through data collection an existing research result with an accurate search method and involving a critical review process. in study selection.

The results of a systematic literature review found that there were 5 studies stating that there were dental and oral health problems in elementary school children, and a number of 15 studies found that AR media was effective in improving dental and oral health behavior in elementary school children.

From the results of a literature study, the form of AR-based LED media can be developed as a media for promoting oral health in elementary school children. Several studies have developed AR media in the form of EMT, Dental Smile, which has proven effective in improving behavior in maintaining the oral health of elementary school children.

Keywords:- *Dental and Oral Health Behavior, Augmented Reality, Children, Elementary School.*

I. INTRODUCTION

Dental and oral health is an important part of other physical body parts, so it cannot be separated from other body health, because it will affect overall health. Dental health problems that are often encountered are dental caries at the age of children. From the 2018 Riskesdas data, it was obtained that 54% of children aged 5-9 years and 41.4% of children aged 10-14 had dental caries (Riskesdas, 2018).

The high number of dental health problems experienced by children can be influenced by several factors, one of which is behavioral factors. The poor behavior of maintaining children's dental health can be seen from the results of the 2018 Riskesdas, namely children aged 5-9 years who have brushed their teeth every day as much as 93.2% but only 1.4% brush their teeth on time and in children aged 10-14 in 96.5% who brushed their teeth every day but 2.1% were on time.

One effort that can be done to improve the behavior of maintaining children's dental health is health promotion. The selection of health promotion media used for elementary school students is certainly different from the media used for adults.

The development of information and communication technology currently involves a lot in the multimedia field because it is effective in conveying information. The use of technology in the multimedia field that is currently being developed is Augmented Reality (AR). AR is a technology that combines three-dimensional (3D) virtual objects into a real three-dimensional environment and displays them in real time.

Using *Augmented Reality* in health education media can attract more children's attention and can make education an interesting thing to apply in accordance with current developments.

II. METHOD

This study uses *a systematic literature review* (SLR), which is a synthesis of the results of a systematic, clear, comprehensive literature study by identifying, analyzing, evaluating through data collection an existing research result with an accurate search method and involving a critical review process. in study selection. The database searches used included Google Scholar, ScienceDirect, DOAJ, PubMed, ProQuest, EBSCOhost, SINTA, Garuda Portal. The keywords used are dental and oral health behavior, Augmented Reality, elementary school children. There were

24 articles obtained and 7 articles analyzed according to the suitability of the topic, objectives, research methods used, sample size, results of each article, and limitations that occurred.

III. RESEARCH RESULT

Table 1 Review Article

Researcher	Title	Sample	method	Output
Tony Hidayat , 2015 . Indonesia	Application of Augmented Reality Technology as a Media Model for Dental Health Education for Children	30 students	Quasy Experimental one pretest-posttest group	Based on the average value (mean) after treatment with the AR method, good results were obtained at 17.17 and the average value (mean) with the lecture method was 15.67, which means the mean difference is 1.500. If seen from probability = 0.002 then, p = 0.002 ≤ 0.005, which means that there is a difference in the effect of dental health education using the AR method and the lecture method in increasing children's knowledge.
Rabia M. Yilmaz, 2015. Turkey	Educational magic toys developed with augmented reality technology for early childhood education	30 teachers 33 children	Triangulation method	Based on the results of research on student behavior using EMT operations of 42.30 % lower than the use of AR in student interaction-oriented behavior with a result of 57.70%. Which means the use of AR is more effective.
Rikawarastuti, et al, 2017. Indonesia	The Use of "Kak Ayu Dental Flipbook" in Oral Health Knowledge Improvement for Elementry School Students in Depok	141 students	Quasy Experimental pretest-posttest without control group	There was an increase in knowledge seen from the average pre-test results of 80.85 and 93.40 post-test. And there is a relationship between increased knowledge and education of "KakAyu Dental Flipbook" with a pValue = 0.001.
Febri Saputra, 2017. Indonesia	Dental and Oral Health Education Media Design With Application of Augmented Reality Technology on Android-Based Systems	29 students	experimental	In the hypothesis test, the Asymp results were obtained. Sig (2 tailed) has a value of 0.000 (< 0.05) so it can be concluded that there is an effect of the use of educational media on students' knowledge.
Aditya Nurrochman, et al. 2019. Indonesia	application "Seyum Gigiku" android based media promotion as prevention of dental caries knowledge and attitudes towards increasing the mother in Banyudono district PKK	48 mothers pkk	Quasy Experimental with pretest-posttest non equivalent control group	The application of "smile my teeth" is more effective than the use of conventional media in increasing knowledge and attitudes as seen from the results of p value > 0.05. the use of Augmented Reality is easier to understand than conventional media, because in delivering information participants are confronted directly with real information related to it and the nature of AR that encourages a willingness to learn can help participants be more active in the process of receiving information.
Yulita Salim, et al. 2019. Indonesia	The use of augmented reality to educate preschoolers on preventing dental malocclusion	50 students	Experimental	Dental education activities using Augmented Reality are carried out four times in three months. This activity is given to students, teachers and parents of students in the form of counseling on how to care for teeth and mouth. Then Quasy experimental pretest posttest with control group was monitored for 30 days.
Abral, Jusuf Kristianto, Yeni Maryani, Neni Setiwaty, Rizki Sofian. 2020. Indonesia	Smart Dental Box As A Media Counseling To Increase Knowledge And Behavior Of Oral Dental Health	26 students	Quasy experimental pretest posttest with control group	The results of the study obtained a sig value of 0.000 <0.05, which means that there is an influence of the Smart Dental Box praga tool as a change in increasing knowledge of dental and oral health. In the behavioral value, a sig value of 0.000 < 0.05 is obtained, which means that there is a change in the increase in dental and oral health behavior.

ISSN No:-2456-2165

IV. DISCUSSION

In a literature review discussing health learning (educational) media for elementary school children, the focus on improving dental and oral health maintenance behavior is still very limited.

Generally the media used as a tool for conveying messages are media such as posters, dental phantoms and flipcarts and lecture and demonstration methods. However, this method has the disadvantage that it is too monotonous and children become passive because children only act as spectators and listeners, causing boredom in children and disturbing concentration in seeing, listening and understanding the material presented. This shows that the child's lack of interest in the media used.

Learning that utilizes *augmented reality* is designed by taking into account the cognitive development and characteristics of students, namely elementary school children so as to create interactive learning and attract the attention of students who can help students understand the material presented.

Study of the results of a literature study conducted on 30 students consisting of 18 boys and 12 girls. The learning media used are lecture methods and AR applications. From the research results, it was found that the p value was $0.002 \leq 0.005$, which means that there is a difference in the effect of dental health education using AR with the lecture method in increasing children's dental health knowledge.

The literature study that analyzed the comparison of AR applications with EMT media in 33 students in improving behavior in student interaction orientation, the AR application showed results of 57.70% greater than the media using EMT which showed lower results of 42.30%.

So that the use of learning media with Augmented Reality can directly provide learning wherever and when students want to carry out the learning process. [85] With LED media, it is expected to be able to provide behavioral changes by utilizing technology that is currently developing.

V. CONCLUSION

School -age children have various kinds of dental health problems, to solve them a specific strategy is needed which is considered quite effective in its implementation.

Nurses are one of the promoters in the health sector and should make new innovations in providing health promotion according to the age group.

In connection with the development of the 4.0 era, the interventions that will be provided will follow current developments. Thus, the interventions that have been carried out are right on target and are expected to be able to change the mindset of these individuals about dental and oral health.

The use of AR media, seen from the significance value of each intervention, proves that increasing knowledge, attitudes, and actions in maintaining dental and oral health in children is more effective using AR media than conventional media

REFRENCES

[1]. Indonesia Dkr. Law of the Republic of Indonesia Number 36 of 2009 concerning Health. *Accessed From Bpkp Go Id On* 2013; 12.

[2]. Bagaray Fe, Wowor Vn And Mintjelungan Cn. Differences in the Effectiveness of Dhe with Media Booklets and Flip Chart Media on Increasing Dental and Oral Health Knowledge of Students of Manado 126 Sdn. *E-Gigi* 2016; 4.

[3]. Nurhamidah N, Ramadhan ES, Asmawati A, Et Al. Correlation between Dental and Oral Health Status with Student Achievement at SD Negeri 2 Sangga Beru, Gunung Meriah District, Aceh Singkil Regency. *Dental Health Journal* 2016; 3: 35-40.

[4]. Norfai N And Rahman E. The Relationship between Knowledge and Tooth Brushing Habits and the Incidence of Dental Caries at Darul Mu'minin Elementary School, Banjarmasin City in 2017. *Health Dynamics Journal of Midwifery and Nursing* 2017; 8: 212-218.

[5]. Health K, Research B And Health P. 2018 RISKESDAS Main Results. *Jakarta [ID]: Ministry of Health Balitbangkes* 2018.

[6]. Sari EK, Ulfiana E And Rachmawati PD. The Influence of Health Education on Toothbrushing Using the Snakes and Ladders Simulation Game Method on Changes in Knowledge, Attitudes, and the Application of Toothbrushing for School-Age Children in Elementary Schools in Paron Ngawi Region. *Indonesian Journal Of Community Health Nursing* 2019; 1.

[7]. Setiari, Lidia Septianingtias, and Muji Sulistyowati. "Prevention of Dental Caries in Elementary School Students Based on the Theory of the Health Belief Model." *Promkes Journal: The Indonesian Journal Of Health Promotion And Health Education* 5.1 (2017): 65-76.

[8]. Kroll LR And Meier DR. *Educational Change In International Early Childhood Contexts: Crossing Borders Of Reflection*. Routledge, 2014.

[9]. Santoso, Bedjo, Lanny Sunarjo, And Boby Irsan Sakbana. "Model Of Usaha Kesehatan Sekolah Pelangi (Uksp) On Children Oral Health Status." *Journal Of Applied Health Management And Technology* 1.1 (2019): 1-6.

[10]. Fatmasari, Diyah, Et Al. "Mogigu (Menggosok Gigi Asyik Dengan Lagu) To Increase Brushing Teeth Of The Elementary School." *Journal Of Applied Health Management And Technology* 1.1 (2019): 16-22.

[11]. Petersen PE, Hunsrisakhun J, Thearmontree A, Et Al. School-Based Intervention For Improving The Oral Health Of Children In Southern Thailand. *Community Dent Health* 2015; 32: 44-50.

[12]. Santoso, Bedjo, M. Choiroel Anwar, And Muliadi Muliadi. "Monopoly Game As Android-Based Dental Health Education Media." *Journal Of Applied Health Management And Technology* 1.1 (2019): 7-15 .
[13]. Hidayat, Tony. "Application of Augmented Reality Technology as a Media Model for Dental Health Education for Children." *Creative Information Technology Journal* 2.1 (2014): 77-92.
[14]. Yilmaz, Rabia M. "Educational Magic Toys Developed With Augmented Reality Technology For Early Childhood Education." *Computers In Human Behavior* 54 (2016): 240-248..
[15]. Saputra, Febri. *Dental and Oral Health Education Media Design with the Application of Augmented Reality Technology on an Android-Based System* . Diss. November 10th Institute of Technology, 2017.
[16]. Rikawarastuti, Rikawarastuti, et al. "The Use of "KakAyu Dental Flipbook" in Oral Health Knowledge Improvement for Elementary School Students in Depok." *Kesmas: National Public Health Journal* 11.4 (2017): 163-167.
[17]. Atika, Nurma Ghina. "Effectiveness of Virtual Reality Distraction on Anxiety and Fear in Children Aged 6–12 Years of Extraction of Primary Teeth at Provincial Rskgm."
[18]. Salim, Yulita, et al. "The Use Of Augmented Reality To Educate Preschoolers On Preventing Dental Malocclusion." *Bulletin Of Social Informatics Theory And Application* 3.2 (2019): 56-60.
[19]. Abral, Abral, et al. "Smart Dental Box As A Media Counseling To Increase Knowledge And Behavior Of Oral Dental Health." *Quality: Journal of Health* 14.1 (2020): 38-45 .