



Educational Game: SI MANGGIS CELEBES, As Dental Health Education Media Based with Android System for Pre-School Student

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Abstract

Percentage of oral and dental problem in Indonesia increased from 23,2 % in 2007 to 25,9% in 2013. South Sulawesi has the highest percentage of oral and dental problem in Indonesia which is 36,2%. Oral and dental problems that generally happen in preschool student are caries and bad habit. This study propose to introduce new method in Dental Health Education (DHE) as solution for oral and dental problem of preschool student which is an educational game based android system. The kind of this study is a quasi experimental. The subject of this study was preschool student in TK Islam Nurul Mubarak Maros. Using pre and post test measuring instrument. The data was analyzed using wilcoxon signed rank. There is different percentage of preschool student knowledge about oral and dental health after given DHE by educational game Si Manggis Celebes. The data of t test showed significant different between before and after given DHE with educational game Si Manggis Celebes. The p value is 0,000 or $p < 0,05$. Si Manggis Celebes was effective to use as Dental Health Education media for preschool student.

Keywords: Dental problem; DHE; Preschool student; Educational game.

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1. Introduction

Dental and oral health is a very important thing for human health and well-being. Problems in the teeth and mouth will interfere the function of the teeth and the mouth itself, such as talking, playing and socializing. The percentage of dental and mouth problems occurring in Indonesia has increased by 2.7%, from 23.2% in 2007 to 2013 by 25.9% and the highest percentage of dental and mouth problems is found in South Celebes with a large percentage more than 35% based on Pusdatin Kemenkes. The most common health problems in preschool ages 3 - 5 years are caries and bad habits. Based on Riset Kesehatan Dasar 2007, caries prevalence in children under 12 years in Indonesia is 82% [1,2,3].

To manage the issues about dental and oral health in children, appropriate management is necessary. In the past, there have been many attempts to solve the dental and oral health problems, such as dental and oral health education through direct counseling or by dentists in clinics, demonstrations how to maintain oral health and through the posters. Dental and oral health education is divided into 2 methods, socratic and didactic. The socratic method is the method by which the educators and students alike actively communicate, for example demonstrations. Didactic methods are kind of methods where educators tend to be active while students are not given the opportunity to argue, for example lectures. However, nowadays the prevalence of dental and oral health problems of children in Indonesia is still increasing. The emphasis of the concept of health counseling is more on improving the behavior of preschool student to be healthy, both cognitive and motoric aspects, so the knowledge that they get is successfully achieved. The most commonly used methods of dental and oral education are lecture and play methods [4,5,6].

Therefore, we created a new method of dental and health education with an approach to children by playing and utilizing today's technology-based android gadgets. Playing is a favorite activity children like's to do and it affects the capability of children in preschool where they are having the golden age phase, so it will be easier to absorb knowledge when it is associated with what they love. This is according with the principle that health education can be obtained from changes in behavior and health education from practitioner who has in charge. Health education recommendations are insufficient to alter behavior so that appropriate and proper way is required to improved the knowledge that lead to a good behavioral changes in preschool children [7].

Therefore, educational games are created to entertain (entertainment) preschool children, which called as Si Manggis Celebes. This method can be used as an oral and dental health that will increase the knowledge of preschoolers about oral health. This is based on the fact, that nowadays children have a large part as a technology users and it will continue to increase in the future. They have a good adapting ability with the technology so they are able to interact very well with the digital technology. Using gadget applications are required a good cognitive, motoric and communication skills, and preschool children are at the golden age stage where the development of motoric and cognitive develops rapidly. By playing game the children can setting goals, ensuring the goals rehearsal, providing feedback and maintaining the record of the game. Prensky said in Jong and his colleagues that computers games are fun, pleasurable, challenging and rewarding. So, that the application of educative play, Si Manggis Celebes, can function well as a media of dental and oral health education for preschoolers to improve their oral health knowledge [8,9,10].

2. Material and Methods

This research was held in TK Islam Nurul Mubarak, Maros regency on July 8, 2017. The subjects of research are found in class B, with 20 students who will be given a media of dental and oral health education in the form of game application Si Manggis Celebes. Before the demonstration is performed, researchers provide tools and research materials such as personal computer, speaker, and smartphones, then explain the purpose of this research to students and what activities will be done. Then, students are given a pretest in a questionnaire form by conducted interviews, because the subject is still not able to read and fill out his own questionnaire. After that, students are shown a video screen from the application of Si Manggis Celebes for 15 minutes according to the time of the application itself. After the educational game application ends, students are given a post test with a conducted interview way.

2.1. Data Collection and Analysis

Data collection conducted in this study using pre test questionnaire and post test. This questionnaire contains the names of the subjects and questions about dental and oral hygiene that the content is proper with those in the game application of Si Manggis Celebes such as dental function, healthy food, bad habits, and tooth brushing. The correct answer in the questionnaire was given point 1 and the wrong answer was given point 0. The accumulated percentage of the students' level of knowledge on oral and dental health was calculated using

the formula:

$$\text{Percentage of Student Knowledge} = \frac{\text{total of the right answer}}{\text{total question}} \times 100\%$$

Evidence :

Interpretation of student's level of knowledge:

- Good = value $\geq 70\%$
- Medium = value 51 - 69%
- Bad = value $\leq 50\%$

3. Result

This research is about the effectiveness of the Si Manggis Celebes as a media of dental and oral health education for preschool children that was held at 8th July 2017 in TK Islam Nurul Mubarak, Maros regency. The subject is collected by total sampling technique which is takes all student in class as the samples. There are 20 students in class B of TK Islam Nurul Mubarak and all of the students were present at the time of the research. The statistics analysis in this research using wilcoxon signed rank test which is analogue t in pairs test for ordinal data scale which is not distributed normally.

Table 1: Frequency distribution of knowledge level in class B at TK Islam Nurul Mubarak by the DHE application, Si Manggis Celebes.

Knowledge Level	Pretest	%	Posttest	%
Good	2	10	11	55
Medium	5	25	6	30
Bad	13	65	3	15
Total	20	100	20	100

According to Table 1, it is showed that 65 % of students in class B is not having enough knowledge about dental and oral health like the function of teeth, healthy food, the right way of brushing teeth and bad habit. But, after the application is given to the samples, the percentage of student that having less knowledge is increased to 15% after given the DHE media application, Si Manggis Celebes. And 55% of students is having good knowledge after given that DHE media application. It means, there is an increasing to the knowledge of students after given the DHE media in the form of game application Si Manggis Celebes.

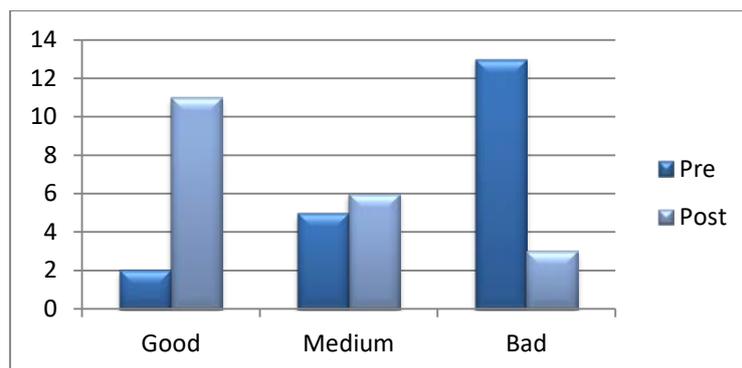


Figure 1: Diagram of student knowledge level class b tk islam nurul mubarak before and after dhe with media application education si manggis celebes

Table 2: The value average of DHE Media in the form of game application Si Manggis Celebes pre test and post test.

	Pretest	Posttest	Deviation	p
Average	47,5	69,5	22	0,000*

*p<0,05

Table 2, show the results of the t in pairs test show the significant result, which the value of p is 0,000 means $p < 0,05$. So, it is showed a meaningful difference between the knowledge level of students before and after given DHE media in the form of game application Si Manggis Celebes to the students of TK Islam Nurul Mubarak .

4. Discussion

This study was conducted to show the effectivity of Si Manggis Celebes, educational game as Dental Health Education media for pre-school student. Based on the result, there is difference between knowledge level of students before and after given Dental Health Education media in the form of game application Si Manggis Celebes to the students of TK Islam Nurul Mubarak. This statement was supported by the research from Shilpa and Swamy with the significant increasing of students knowledge result after given an education with playing system such as role play [11]. The effectiveness of using game as media for study was supported by the statement of American Psychological Association that playing game has benefit in 4 aspect such as motoric, social, motivational and emotional [12].

5. Conclusion

The knowledge of dental and oral health of students in class B TK Islam Nurul Mubarak Maros increased significantly after given a media of dental and oral health education in the form of game application, Si Manggis Celebes.

References

- [1]. Kwan SYL, Peterson PE, Pine CM, et al. Helath-promoting schools: an opportunity for oral health promotion. *Bulletin World Health Organization*, vol.83, pp. 677 – 678, 2015.
- [2]. Kemenkes. *Situasi kesehatan gigi dan mulut*. Pusat Data dan Informasi Kementrian Kesehatan RI 2013.
- [3]. Marotz LR, Allen KE. *Developmental profiles: pre-birth through adolescence*. 7th ed. Belmont: Wadsworth, 2017, pp. 130 – 131.
- [4]. Pezhman Z, Jayakaran M. The use of socratic method as a teaching/learning tool to develop students critical thinking: a review of literatur. *Language in India*, vol. 15, pp. 256 – 257, 2015.
- [5]. Jurgensen N, Petersen PE. Promoting oral health of children through schools – result from a WHO global survey 2012. *Community Dental Health*, vol. 30, pp. 204 – 206, 2013.
- [6]. Marcela GV. Didactics, temporality and teacher education. *Rev Bras Education*, vol. 20, pp. 595, 2015.
- [7]. Mohammadi TM, Hajizamani A, Bozorgmehr E. Improving oral health status of preschool children using motivational interviewing method. *Journal Dental Research*, vol. 12, pp. 476 – 477, 2015.
- [8]. Yee HK, et al. Why gadget usage among preschoolers should matter to teachers? a pilot study. *GESJ: Educational Science and Pscology*, vol. 40, pp. 98 – 99, 2016.
- [9]. Jong MSY, Shang J, Lee FL, Lee JHM. Harnessing computer games in education. *Jorunal Distance Education Technology*, vol. 6, pp. 1 – 2, 2008.
- [10]. Griffiths M. The educational benefits of videogames. *Education and Health*, vol. 20, pp. 47 – 48, 2002.
- [11]. Shilpa PM, Swamy PGN. A study to evaluate the effectiveness of role play on knowledge regarding oral hygiene among higher primary school children in selected school at Tumkur. *Journal Nurse and Health Science*, vol. 4, pp: 37,41 – 42, 2015.
- [12]. Isabela G, Adam L, Rutger C. The benefits of playing video games. *Journal American Psychologist* vol. 69, pp. 66-78, 2014.