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Qugisaki Media Development on Oral Health in Elementary School Students

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ABSTRACT

Introduction: Oral health problems are one of the problems that many populations around the world complain about. The condition of oral health people in Indonesia is still a concern. A promotive effort is needed to prevent oral health problems by educating dental health from an early age. Interesting dental health education methods must be supported by interactive media to help children learn to maintain oral health. The purpose of this study was to design the game media "Quartet Gigi Masa Kini" (Qugisaki) as an educational medium to maintain oral and dental health.

Material and Method: The type of research used is research and development with a pre-experiment research method, one group pretest-post test design. The research stage is to determine the 4-D development model consisting of the defining stage, design stage, development stage, and detonation stage. The study population was grade III and IV elementary school students as many as 113 students. Research sampling using stratified random sampling technique totaling 80 respondents. Analysis of qugisaki media validity test data by 2 expert judgements and the effectiveness of qugisaki media on student knowledge was carried out with a Wilcoxon non-parametric difference test.

Result: The results of the media feasibility test obtained an average value of 3.56 (very valid) and the results of the data test paired between the pre-test with post-test 1 and pretest with post-test 2 there was an increase in knowledge seen from the average value of 13.20 to 32.59 and 15.25 to 32.85 with a p-value = 0.000 (< 0.05) means that Qugisaki media is effective in increasing the knowledge of elementary school students. While post-test 1 with post-test 2 values between post-test 1 and post-test 2 saw the average value decrease from 12.33 to 11.64 with p-value = 0.754 (> 0.05).

Conclusion: The use of qugisaki media can be used as an alternative educational media and has the potential to increase student's knowledge about dental health.

Keywords: Dental Health Education, Interactive Media, Knowledge, Promotive Efforts".

Introduction

Oral diseases are one of the problems that occur globally in the world.[1] The prevalence of dental health problems according to Global Burden Disease (GBD) in 2019 reported that around 3.5 billion people worldwide experience oral disease.

So the spread of oral disease is the most widespread of the 300 diseases that can affect individual health.[2] Dental caries is a preventable disease and is considered a public health problem that can affect all ages, especially children.[3]

According to the World Health Organization (WHO), 60% to 90% of children develop dental caries.[4] Developing countries in Indonesia The problem of oral diseases requires serious attention from health workers. National Health Research Data (RISKESDAS), 2018 reported the prevalence of dental caries in 89% of school-age children. The proportion of cavities with a percentage of 45.3%, and oral health problems in the age group of 6-12 years is as much as 38.1%.[5]

Health promotion has an important role in improving health.[6] Efforts to increase knowledge of oral health require the design of attractive dental health education media so that the information or message conveyed can be received easily by students.[7]

Providing dental health education to elementary school-age children is very important because elementary school age is a critical period for the growth of dentition teeth so it requires an approach to produce healthy behaviours, especially dental health. Therefore, the strategy of delivering messages is tailored to students' interests by playing while learning.[8] Learning while playing for children is an educational activity using game media that can spur the development of cognitive, emotional, social and physical aspects of children.[9]

A program to overcome the oral problems of school children in Indonesia that has been running is Usaha Kesehatan Gigi Sekolah (UKGS).[10] Promotive efforts in UKGS activities are often carried out tending to conventional health education using lecture methods assisted by learning media such as phantom posters, videos with a one-way approach and minimal interaction between facilitators and students to place facilitators as experts by only focusing on delivering information that encourages patients to follow the advice conveyed.[11]

One of the solution steps is to create innovations to improve the process of promotive effort. Innovation strategies that can increase students' interest in dental health by using learning while playing methods. Researchers try to take a two-pronged approach to create interactions that are not passive using extension media the so-called Quartet Gigi Masa Kini (QUGISAKI).

This media will be one of the steps to ensure the sustainability of UKGS Innovative in improving students' dental health more optimally. Qugisaki is a fun learning medium, in addition to fun this game is well known to elementary school students in general, the material in the form of picture cards is presented in the form of pictures equipped with captions from the picture. The results of several articles reviewed 4 articles discuss visual aids in the form of card games learning while playing, children become more active can increase children's knowledge. So card games can be used as one of the dental health promotion media that can increase the knowledge of elementary school children.[12] This study aims to determine the validity, effectiveness, and practicality of Qugisaki media on dental health in elementary school students.

Materials and Methods

The type of research used is research and development with a pre-experiment research method, one group pretest-post test design. The research stage is to determine the 4-D development model consisting of the defining stage, design stage, development stage and detonation stage. The study population was grade III and IV elementary school students as many as 113 students. Research sampling using stratified random sampling technique totalling 80 respondents.

This research flow adopts the 4-D development model from Thiagarajan[13] with the initial steps of early-end analysis, student analysis, task analysis, concept analysis and goal analysis After the analysis stage, the next step is to design media by the material and characteristics of students, then compile the Qugisaki media-making pattern until it produces prototype 1 which is then submitted to the expert validation team to assess the feasibility of the media after the media is declared suitable for use based on input and suggestions from expert validators, it will produce prototype 2 where the learning media is ready to be tested on a limited scale, up to the deployment stage.

Qugisaki media games are given to students with work instructions including:

1. Quartet card games are conducted in small groups of 4 students/groups. Students sit in a circle.
2. Cards are dealt with each student getting 4 cards each, while the rest of the cards are placed in the middle.
3. After each card, the player performs hompimpa to determine the first player.
4. The first player mentions the desired category, if all players do not have a card then the first player must take 1 card in the middle.
5. Next, the second player mentions the desired category. If another player has the desired category of cards, then that player must give his card. If no other player has the card mentioned then that player must take the card in the middle.
6. If the player has collected all the objects in the category, then the player must read the explanation of the card. If you haven't collected all the objects in the category, then the game continues to the next player.
7. The above steps are repeated until all the cards run out and get the category.

Data analysis in this study was tested for the validity of Qugisaki media by expert judgement and to determine the effectiveness and practicality of Qugisaki media on student knowledge, a non-parametric Wilcoxon difference test was carried out because the data was abnormally distributed. The study protocol (No.21/Ethical Approval/FKGUI/VI/2023) had been approved by the Ethics Committee of the Faculty of Dentistry, Universitas Indonesia.

Results and Discussions

The intervention provided was in the form of dental health education with Qugisaki media designed by researchers and contained information related to oral and dental health. One card bundle consists of 24 cards, each card measuring 8 cm long and 5.5 cm wide, each category has 4 objects and each object has its own pair and explanation. So in 1 package, there are 6 categories. Categories in qugisaki media include:

1. Dental caries (definition, causes, how to prevent, treatment);
2. Dental persistence (understanding, causes, how to prevent, treatment);
3. Dental calculus (understanding, causes, how to prevent, treatment),
4. Toothbrush (time, stalk shape, toothbrush head, amount of toothpaste);
5. Toothbrushing technique (vertical, horizontal, bass, roll);
6. How to maintain dental health (diligently consume fibrous foods/drinks reduce karyogenic foods/drinks, control teeth at least once every 6 months, drink enough water).

Qugisaki media games are conducted in small groups and last for ± 1 hour, supervised by researchers and field enumerators. The development of qugisaki media was validated by two expert judgements, namely dental health promotion experts.

Figure 1: Media Qugisaki (Quartet Gigi Masa Kini).

The results of expert validation show an average value of 3.56, which means that Qugisaki Media is very valid to use to increase students' dental health knowledge.

Category	Mean	Total Average	Keterangan
Display aspect	21,74	3,56	Very Valid
Language Aspect	6,75		

Table 1: Expert Validation statistical test (n=2).

Table 2 shows that the level of knowledge of respondents before being given good criteria qugisaki media intervention was 58 respondents (72.50%), while the level of knowledge after being given qugisaki media intervention increased with good criteria as much as 78 (97.50%) and 77 (96.25%).

Knowledge	Pretest		Post-test I		Post-test 2	
	n	%	n	%	n	%
Good	58	72,50	78	97,50	77	96,25
Enough	15	18,75	2	2,50	3	3,75
Less	7	8,75	0	0	0	0
Total	80	100	80	100	80	100

Table 2: Frequency distribution by Level of knowledge about dental health.

Variable	Treat	Mean ± SD	Delta	*p- value*
Knowledge	PreTest	13,20 ± 66,00	19,39	0,000
	Post-Test 1	32,59± 1825,00		
Knowledge	Pre-Test	15,25 ± 122,00	17,6	0,000
	Post-Test 2	32,85 ± 1708,00		
Knowledge	Post-Test 1	12,33 ± 148,00	-0,69	0,754
	Post-Test 2	11,64 ± 128,00		

Table 3: Average value of pretest and postest knowledge results.

Table 3 shows that the results of paired data tests (effectiveness) have increased, it can be seen that the results of the effectiveness test between pre-test with post-test 1 and pre-test with post-test 2 there was an increase in knowledge seen from the average value of 13.20 to 32.59 and 15.25 to 32.85 with a p-value = 0.000 (< 0.05) means that Qugisaki media is effective in increasing the knowledge of elementary school students. While post test 1 with post-test 2 values between post-test 1 and post-test 2 saw the average value decrease from 12.33 to 11.64 with p-value – value = 0.754 (> 0.05).

The researchers' analysis of post-test 1 and post-test 2 decreased due to the time gap between post-test 2 and 1 week after the qugisaki media intervention was given. A person's ability to remember information will increase when learned with reading and writing methods because reading and writing methods will increase by 72% after 3 hours.[14]

According to Jean Piaget's theory, the stages of children's learning development are not only influenced by different levels of student understanding. The models and treatment methods used must vary and be adjusted to the age level.[15] The intellectual abilities of children aged 6-12 years are able to receive a variety of new knowledge that can develop students' mindsets. Grades III and IV are students who are in the average age range of 9-10 years. Where this age group has a high interest in learning, a memory that is still strong, and the ability to capture and understand the material presented.[16,17]

One effective method for school-age children is playing because school-age children have coordination and intellectual interaction with other children their age. In addition to increasing knowledge, playing can also train students to work together and train students to recognize a rule to train discipline.[18]

Qugisaki media is a visual media consisting of cards designed with pictures. Play activities while learning with qugisaki media make the learning process easier, interesting and fun and will affect the learning outcomes of respondents. The results of the study conducted by researchers are in line with previous studies where healthy dental nutrition cards are very feasible to be used to improve health as a parenting pattern to prevent stunting in toddlers.[19]

Wicaksono's research (2022) states that Happy Teeth Card as an innovative dental health education media received positive responses from school students and teachers.[20] Similar research also concluded that quartet card media can be developed as a dental health education media such

as dental health innovations called KARTINI (Kartu Sakti Animasi Gigi), which is a dental health learning media during a pandemic that has a role as an easy and fun UKGS learning medium for students.[21]

Conclusion

Qugisaki (Quartet Gigi Masa Kini) is an innovative educational media about dental health that is interesting and interactive. Qugisaki is effective in increasing the knowledge of elementary school students supported by picture stories. That way, students are interested in participating in oral health counseling.

In addition, government agencies related to health offices, primary health or school institutions need to utilize innovative new media in providing education as learning media in the field of dental health education.

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