



# Dental Health Labyrinth Game Education to Improve Dental and Oral Health Knowledge in Elementary School Students

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## ABSTRACT

**Background:** Elementary school children are aware of the learning and understanding process. Therefore, it is important to improve dental health knowledge. The use of appropriate media for promoting dental and oral health is very effective if it is adjusted to the age of fifth grade elementary school students. One of the educational media used is a maze game that is adapted to convey dental health information interactively. So that it can be used in promotional activities which are one of the UKGS programs to improve dental health knowledge. **Objective:** This study aims to analyze dental and oral health knowledge before and after the dental health labyrinth game education in elementary school students. **Method:** The research design used a quasi-experiment with a pretest and posttest design with one group design. Sampling in this study used a purposive sampling technique with a sample size of 62 respondents. The instrument used a questionnaire and Dental health labyrinth media. Data analysis was conducted using the Wilcoxon test. **Results:** The results showed that dental health knowledge increased, from 32 students (51.6%) in the sufficient category to 62 students (100%) in the good category. The average increase in knowledge before and after education was 78.39 to 98.06 with statistical test results  $p = 0.000$  ( $p < 0.05$ ). **Conclusion:** Dental health labyrinth game education is effective increasing dental health knowledge in elementary school students.

## INTRODUCTION

The emergence of dental health problems in Indonesian society needs to be considered, considering the large number of people who suffer from dental and oral diseases (Ramdiani et al., 2020). The vulnerability of dental and oral health problems in elementary schools is one of the causes of health problems in Indonesia (Erdiyani et al., 2023). This condition is a transitional period or a mixture of primary teeth and permanent teeth. This period must be considered because it will affect children's teeth in the future. In addition, this condition can have an impact on concentration in learning, appetite, and nutritional status of children (Priharti et al., 2021).

Dental health problems are often ignored and not considered a priority in health problems compared to other health problems. Based on basic health research data in 2018, it showed that 57.6% of the Indonesian population has dental and oral health problems. DKI Jakarta Province, 59.1% of the population has dental and oral health problems, but only 16.4% receive treatment from dental medical personnel. Based on the characteristics of the age of 10-14 years, dental and oral problems in Indonesian children are around 55.6%, but only 9.4% receive treatment from dental medical personnel (Risikesdas, 2018).

Elementary school children, children have a pattern of awareness of the learning and understanding process. The importance of the role of parents in the child's learning process because it is expected to be able to successfully increase knowledge of dental and oral health. This success is supported by an increase in knowledge, awareness, and daily behavior. Therefore, elementary school children need to increase their dental health knowledge (Pay et al., 2021).

An effective way to promote dental and oral health education in elementary schools is through learning media. According (Notoatmodjo, 2012), media is a tool for conveying health materials and information to help demonstrate something in the learning process. The appropriateness of media use needs to be adjusted to the target age criteria, so that it can have a positive impact on dental and oral health (Suwarsono et al., 2023).

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One of the uses of educational game media to help the learning process is the maze game. This dental health-themed game is a game that involves two teams and each team must work together to pass through winding doors and contain dental health questions to reach the finish line of the game. This game is made of a 3D board and involves the use of dice to move. According to (Ginanjar & Santi, 2020), the maze game was adapted as a tool to convey dental health information interactively. The selection of this game is based on changes to the independent curriculum that involves media in providing fun learning experiences and motivating children to be actively involved in learning in elementary school children.

The use of interactive media in the form of a dental health labyrinth game education can be used as an educational medium in promotional activities which are one of the routine UKGS (School Dental Health Effort) programs, so that this program can help to improve dental health knowledge in elementary schools.

## METHOD

The design of this study is a quasi-experimental study with a pretest and posttest design with one group design. This study was conducted to determine the effectiveness of knowledge before and after being given dental health labyrinth game education. Data collection will be carried out in May 2024. This study uses sampling with the purposive sampling method, with a sample size of 62 respondents. The instrument used in data collection used a questionnaire given to measure dental health knowledge and the dental health labyrinth game education. Labyrinth game education was played by 2 teams, 1 round, for 15-20 minutes and guided by one instructor, then the researcher conducted education for 3 interventions. Data analysis used in this study was using SPSS with the Wilcoxon test

## RESULT

**Table 2.** Frequency Distribution of Knowledge Before and After Dental Health Labyrinth Game Education

| Knowledge    | Before    |            | After     |            |
|--------------|-----------|------------|-----------|------------|
|              | F         | %          | F         | %          |
| Good         | 29        | 46.8       | 62        | 100        |
| Sufficient   | 32        | 51.6       | 0         | 0          |
| Poor         | 1         | 1.6        | 0         | 0          |
| <b>Total</b> | <b>62</b> | <b>100</b> | <b>62</b> | <b>100</b> |

Table 1 shows that before the dental health labyrinth game education in grade V students, the majority of 32 students (51.6%) had 35 knowledge in the sufficient category, 29 students (46.8%) knowledge in the good category and 1 student (1.6%) knowledge in the poor category. Table 1 shows that before the dental health labyrinth game education in grade V students, the majority of 32 students (51.6%) had 35 knowledge in the sufficient category, 29 students (46.8%) knowledge in the good category and 1 student (1.6%) knowledge in the less category. While after the dental health labyrinth game education, students who had knowledge in the good category were 62 students (100%), and there were no students in the sufficient and poor categories.

**Table 2.** Effectiveness test of Knowledge Before and After Dental Health Labyrinth Game Education

| Knowledge | Mean  | Difference | p-value |
|-----------|-------|------------|---------|
| Pre-test  | 78.39 | 19.67      | 0.000   |
| Post-test | 98.06 |            |         |

Table 2 shows that from the research data before the dental health labyrinth game education, there was an increase in the average knowledge of respondents before the dental health labyrinth game education of 78.39 and there was an increase in the average knowledge of respondents after the dental health labyrinth game education, which was 98.06. The results of the effectiveness test using the Wilcoxon test obtained  $p = 0.000$  ( $p < 0.05$ )

## **DISCUSSION**

The use of dental health labyrinth game educational media in this study is expected to create an independent, active, fun, interesting, relaxed learning atmosphere, and provide optimal results (Setyowati et al., 2023). In this study, this can be seen from the increase in dental health knowledge that was carried out directly on May 14-16, 2024, by 62 fifth grade students of Kramat Jati 11 Elementary School, East Jakarta with 34 male students and 28 female students.

The results of this study showed an increase in dental health knowledge before and after the dental health labyrinth game education. This can be seen from the pre-test and post-test data. Based on the results of the pre-test data conducted before the education with the dental health labyrinth game was given, 29 students (46.8%) were classified as good, 32 students (51.6%) were classified as sufficient, and 1 student (1.6%) was classified as lacking. Meanwhile, the results obtained from the post-test data conducted after the education with the dental health labyrinth game was given, there was an increase in all fifth grade students with 62 students (100%) having knowledge in the good category. The results of the effectiveness test using the Wilcoxon test obtained  $p = 0.000$  ( $p < 0.05$ ). This means that Dental health labyrinth game education is effective in increasing elementary school students' dental health knowledge.

The increase in knowledge in this study was due to the effective educational media used. This is because the dental health labyrinth media was adapted as a medium to convey information about dental health interactively. During the game, students can be actively involved in answering questions about dental and oral health to measure knowledge related to dental and oral health. This maze game is designed by forming boxes on each winding path to lead to doors containing questions about dental and oral health material. To complete the game to the finish, a good mindset is needed in choosing the right path (Setya & Rosada, 2021). In addition, the material and media in this game have been adjusted to the characteristics of fifth grade elementary school students because at this age it is the ideal time to train a child's motor skills, including how to maintain their dental health (Puspitawati et al., 2022). Then, children have the nature of enjoying playing, doing activities full of movement, socializing, working together and thinking logically (Lestari et al., 2020). Thus, it is concluded that choosing the right educational method can hone the ability and understanding of dental and oral health.

Dental health labyrinth is an educational media modified from several studies that have used labyrinth game media as educational media in other learning contexts. Thus, the results of this study are in line with research (Setya & Rosada, 2021) obtained an average of 89.86 in the very good category, so it can be concluded that the labyrinth simulation game in group guidance services on learning concentration is worthy of being tested in group guidance services in schools. The results of this study are also in line with research by (Ginanjari & Santi, 2020) The results showed that student responses in the small group test reached a score of 99.28% and the large group test reached a score of 97.76%, both of which are included in the very good category. The results of this study can be concluded that the labyrinth learning evaluation media is worthy of being tested because it can help fourth grade students who have difficulty understanding learning. Therefore, it can be concluded from the two study results that are in line with the research, namely that this labyrinth game media is worthy of being used to assist learning. Thus, this labyrinth game was modified to help students understand dental health.

The results of the study showed an increase in knowledge from the sufficient category to the good category. During the study, all students were very enthusiastic and interested in learning while playing with the dental health labyrinth game education. This can be proven by all students being very enthusiastic and actively participating in teamwork to solve the dental health labyrinth game education played by 2 teams with a duration of 15-20 minutes. Thus, this dental health maze game media is effective in helping fifth grade students understand learning about dental health. However, in this study it is expected to increase the variety of questions about dental and oral health. So that children tend not to get bored easily with the material presented during the game.

## **CONCLUSION**

Based on the results of the research that has been done, it can be concluded that the dental health labyrinth game education is effective increasing dental health knowledge in elementary school students.

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