


Dental Health Promotion Using Snakes and Ladder Media on the Knowledge of Teeth Brushing of Grade II Students of MIN 8 Padang Lawas Utara

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Article Info	ABSTRACT
<p>Article history: Received May 22, 2025 Revised June 03, 2025 Accepted June 27, 2025</p> <hr/> <p>Corresponding Author: Shiska Buwana Dhewi, Department of Dental Health, Health Polytechnic, Ministry of Health, Medan, North Sumatra, Indonesia Email, shiska.buwana@gmail.com</p>	<p>Dental health is an integral part of overall general health, and it is important to instill it early on, especially in elementary school children. One effective way to increase children's awareness and knowledge about the importance of brushing their teeth properly is through fun and easy-to-understand health education and promotion. This study aims to determine the effectiveness of the snakes and ladders game media in increasing knowledge of brushing teeth in grade II students of MIN 8 Padang Lawas Utara. This study used a descriptive design with a pretest and posttest approach involving all grade II students as a sample (total sampling). Data were collected by administering questionnaires before and after the implementation of the snakes and ladders game that had been modified with dental health education content. The results showed that before health promotion using snakes and ladders media, the majority of students had a level of knowledge in the moderate and poor categories, each of which was 14 people (46.66%), and only 2 people (6.66%) were in the good category. However, after being given an intervention in the form of an educational snakes and ladders game, all students (100%) experienced a significant increase in knowledge, all of which were in the good category. This shows that the use of educational game media such as snakes and ladders is very effective in conveying dental health information in a fun and easy-to-understand way for children. This study provides a positive contribution in developing innovative, interesting, and appropriate dental health promotion methods for elementary school children, and can be applied in elementary school environments as alternative learning media.</p> <p>Keywords: <i>Knowledge, brushing teeth, health promotion, snakes and ladders game, elementary school students.</i></p> <p>This article is licensed under a Creative Commons Attribution 4.0 International License.</p> <div></div>

1. INTRODUCTION

Health according to the World Health Organization (WHO, 2014) is a perfect state, both physically, mentally, and socially, and not only free from disease and disability. Health is not only measured from physical, mental and social aspects, but according to Law No. 23/1992, health includes 4 aspects, namely physical (body), mental (soul), social, and economic.

To achieve the highest possible public health, health promotion is inseparable from dental health promotion, especially dental health promotion because dental health is part of general health and many people do not realize that teeth are very important in supporting a person's health and well-being.

Based on the results of the 2018 Basic Health Research, only 2.8% of the Indonesian population has brushed their teeth twice a day, namely morning and night correctly. This shows that education about brushing teeth must be started early because it will become a habit until adulthood. Based on the results of the 2018 Riskesdas, of the 94.4% of the people of North Sumatra who have brushed their teeth twice

a day, only 1.2% of the people have brushed their teeth at the right time, namely in the morning after breakfast and at night before bed.

Brushing your teeth is a way to maintain oral hygiene and health, especially teeth and surrounding tissues. The purpose of brushing your teeth is to maintain oral hygiene and health, especially teeth and surrounding tissues. According to Boediharto (2010), the purpose of cleaning your teeth is to remove plaque from the entire surface of the teeth. The problems caused by not brushing your teeth are bad breath, cavities, gum disease, and tartar.

Knowledge is the result of knowing and this occurs after people sense a certain object. Human knowledge can be obtained from the eyes and ears. A person gains knowledge through stimuli captured by the five senses. Knowledge can also be obtained naturally or planned, namely through education. Phenomenologically, Langevelt (1952) also said that this education is essentially assistance given by someone to another person who is trying to achieve maturity in a normative sense by using methods such as tools, language and media. Knowledge education is a very important area for the formation of action.

Dental and oral health maintenance efforts should be carried out from an early age. Elementary school age is an ideal time to train a child's motor skills, including brushing teeth (Hidayat & Tandiar, 2016).

School children are those aged between 7-15 years, while in Indonesia children are usually aged between 7-12 years. The school period can be said to be an intellectual period or a period of school harmony (Wijayanti, 2016). School-age children are vulnerable to dental and oral health problems. At this time, milk teeth begin to fall out one by one and the first permanent teeth begin to grow at the age of 6-8 years. With the variation of milk teeth and permanent teeth together in the mouth, it marks the mixed dentition period in children. Newly grown teeth are not yet mature so they are susceptible to damage (Potter & Perry, 2005).

Based on Piaget's cognitive development theory, the intellectual ability of children aged 6-12 is sufficient to be the basis for providing various skills that can develop their thought patterns or reasoning abilities (Yusuf, 2011). So it is hoped that this knowledge will raise their awareness, and ultimately make them behave according to the knowledge they have (Notoatmodjo, 2007). One of the stimuli that can be used in providing children's health education is the simulation game method. The game method is chosen because the learning process will be more active and more enjoyable if combined with games (Rusli and Gondhoyowono, 2012).

One of the media commonly played by children is the snakes and ladders game modified for dental and oral health. The snakes and ladders game is one of the cooperative games that is interesting, light, simple, educational, entertaining, and very interactive if played together (Handayani, 2012).

Based on an initial survey conducted by researchers on 10 students in class IIMIN 8 Padang Lawas Utara, there were 7, namely 70% of children who did not know how to brush their teeth properly, and received information from the Principal of MIN 8 Padang Lawas Utara that there had never been any promotion/education on dental and oral health.

This study starts from the formulation of the problem that focuses on the effectiveness of dental health promotion through snakes and ladders game media on increasing knowledge of brushing teeth in grade II students of MIN 8 Padang Lawas Utara. In this case, the researcher wants to know to what extent educational media in the form of games can improve children's understanding of the importance of brushing their teeth properly. Based on this formulation, the general objective of this study is to obtain a clear picture of the effect of using snakes and ladders media in dental health promotion on increasing knowledge of brushing teeth among elementary school students.

Specifically, this study aims to determine the level of children's knowledge about brushing their teeth before dental health promotion using snakes and ladders media, and to assess changes in children's knowledge after being given the health promotion. In addition, this study also aims to determine differences in students' knowledge scores before and after the intervention, in order to measure the effectiveness of the media used in the health promotion campaign.

The benefits of this research are expected to be felt by various parties. From an academic perspective, the results of this study can be a reference and input for students of Poltekkes Kemenkes Medan, especially the Dental Health Department, in developing innovative and interesting health promotion methods. For the researchers themselves, this activity is a means to increase insight and deepen knowledge about dental health promotion, especially through a fun approach such as games. Meanwhile, for MIN 8 Padang Lawas Utara, this study can provide a positive contribution in increasing

awareness and knowledge of children and teachers regarding the importance of maintaining dental health from an early age, as well as being a source of information in implementing educational activities in the school environment.

2. LITERATURE REVIEW

1. Health Promotion

Health promotion is an integrated effort that combines health education and other interventions related to economic, political, and organizational aspects, which are systematically designed to create behavior and an environment that supports public health (Green & Notoatmodjo, 2007). The main objectives of health promotion basically include three important things, namely increasing public knowledge or attitudes, encouraging behavioral changes towards a healthy lifestyle, and improving the overall health status of the community. According to Lawrence Green (1990) quoted in Notoatmodjo (2007), the objectives of health promotion can be divided into three levels, namely program objectives, educational objectives, and behavioral objectives. Program objectives concern the results to be achieved in a certain period of time that are directly related to improving health status. Meanwhile, educational objectives focus more on behavioral changes as a solution to the health problems faced. While behavioral objectives are closely related to education or learning processes that lead to the formation of knowledge and attitudes that support healthy behavior.

The global health promotion strategy formulated by WHO (1994) and quoted by Notoatmodjo (2007) consists of three main approaches, namely advocacy, social support, and community empowerment. Advocacy is an effort to convince policy makers in various sectors and levels to support proposed health programs. This is important in order to create policies and decisions that support improving public health. Social support is a strategy to obtain assistance from community leaders, both formal and informal, to become a bridge between the health sector and the wider community. Activities in this strategy can be in the form of training, seminars, or workshops aimed at community leaders. Meanwhile, community empowerment aims to improve the community's ability to maintain and improve their health independently. This strategy is realized through various activities such as health education, the formation of community organizations, skills training, and the development of family economic enterprises. Through these three strategies, health promotion is expected to be able to create a healthier society independently and sustainably.

Dental Health Promotion

Dental and oral health promotion is a planned and directed effort to create an atmosphere so that a person or group of people are willing to change old behaviors that are less beneficial for dental health to be more beneficial for dental and oral health. (Budiharto, 2010). Health promotion is also a process where the process has input and output (Notoatmodjo, 2010).

Setyaningsih (2007) stated that dental health is one aspect of overall health which is the result of the interaction of physical conditions (dental and oral health, the shape of teeth and saliva which can affect dental health), mental (willingness to maintain dental and oral health), and social (attitudes and behavior towards dental and oral health).

Dental and oral health maintenance efforts should be carried out as early as possible so that dental caries can be prevented from occurring in children. Schools are one of the environments that can be used as a place to promote dental health (Asio, 2016).

2. Knowledge

a. Definition of Knowledge

Knowledge is the result of knowing, and this occurs after people sense a particular object. Sensing occurs through the five human senses, namely the senses of sight, hearing, smell, taste and touch. Most human knowledge is obtained through the eyes and ears. Knowledge can be obtained naturally or in a planned manner, namely through the education process. Knowledge is a very important realm for the formation of action (Budiharto, 2010).

b. Level of Knowledge

The level of knowledge is part of the cognitive domain that has several levels, as explained by Budiharto (2010). The most basic level is knowing, which is a person's ability to recall a particular object or stimulus that has been received by the five senses. The next level is understanding, which is the ability

to correctly explain previously known information or objects. After that, there is the application level, which is the ability to use the knowledge that has been learned in real situations or conditions. Next is analysis, which is the ability to break down a material or object into smaller parts but still in one structural unit. An even higher level is synthesis, which is the ability to combine various components into a new, intact form or structure. The peak of the level of knowledge is evaluation, which is the ability to assess or make decisions about an object based on certain criteria. In the context of knowledge about health, if the object being studied is related to teeth, gums, and aspects of dental health in general, then the knowledge gained will also include an understanding of the structure and function of teeth and gums and how to maintain dental health as a whole.

3. Knowledge of Tooth Brushing for Dental Health

a. Definition of Tooth Brushing Knowledge

Brushing teeth is a very commonly recommended way to clean all soft deposits and plaque on the surface of the teeth and gums. Brushing your teeth using a toothbrush is a form of mechanical plaque removal (Pintauli, 2012).

One way to maintain healthy teeth and mouth is to train a child's motor skills, including brushing teeth. The ability to brush teeth properly and correctly is a fairly important factor for maintaining teeth and mouth (Gopdianto, 2015).

b. Time and Frequency of Brushing Teeth

The frequency of brushing teeth should be 3 times a day, every time after eating and before going to bed. However, in practice this cannot always be done. Especially during the day when someone is in the office, school, or elsewhere. The best time to brush your teeth is twice a day, namely in the morning after breakfast and at night before going to bed.

4. Media

a. Definition of Media

Media is a means that can be used to convey information to students. Media comes from Latin and is the plural form of the word "Medium" which literally means "intermediary" namely the intermediary of the message source (a source) with the message recipient (a receiver) (Heinick, et al. in Hermawan, 2007: 3). The word media in Arabic is wasaai which means an intermediary or messenger from the sender to the recipient of the message (Arsyad 2002: 4).

b. Snakes and Ladders Media

Snakes and ladders is one of the play therapies: cooperative play. Cooperative play is playing together with clear rules so that a leader and member relationship is formed (Wong, 2009).

This snakes and ladders game is in accordance with the growth and development of school children, especially children aged 8-11 years. Children aged 8-11 years can begin to accept a game that is colored with reason and other objective logic (Mahsun, 2011 in Supriyadi, Setyorini, Merry 2014). This game contains several aspects that teach children about morals and ethics about good and bad. One of the good things taught is about knowledge, attitudes, and actions (Augusyn, 2004 in Yudianto, Mukarromah and Yani 2012).

Through snakes and ladders, children can solve problems by answering questions and carrying out commands on the snakes and ladders game board. This snakes and ladders game provides information to children about brushing their teeth, so that children can apply it in everyday life. Children can improve their ability in reading, understanding interrogative sentences, requests, and role-playing commands, and learn to understand the concept of cause and effect through the snakes and ladders game (Saraswati, 2010).

Conceptual Framework

A concept is an abstraction formed by generalizing a concept. In order to be observed and measured, the concept must be described into variables.

Research variables are something that is used as a characteristic, nature or measure that is owned or obtained by a research unit about a certain concept of understanding. Variables are divided into 2, namely:

- a. Independent variables are those that have an influence or cause to be influenced.

- b. Dependent variables are variables that depend on the consequences or are affected.
To further detail this research, the author has compiled the research variables as follows.

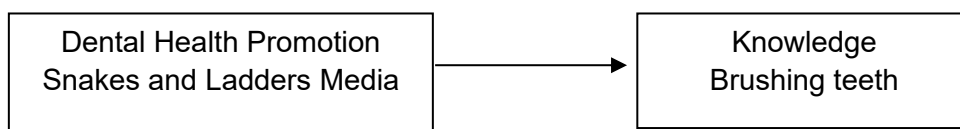


Figure 1. Independent VariableDependent Variable

Table 1. Operational Definition

Variables	Definition	Measuring instrument	The results of the shaving
Dental Health Promotion Media Snakes and ladders	Efforts to improve dental health knowledge with a snakes and ladders game played by respondents containing several boxes about brushing teeth and how long to brush teeth.		Good : 6.7-10 Medium: 3.4-6.6 Bad : 0-3.3
Tooth Brushing Knowledge	A person's knowledge of how many times to brush their teeth, how long to brush their teeth.	Questionnaire	Good : 6.7-10 Medium: 3.4-6.6 Bad: 0-3.3

3. RESEARCH METHODS

Types and Design of Research

This research is a descriptive study that aims to determine dental health promotion using snakes and ladders media.on the knowledge of brushing teeth in class II students of MIN 8 Padang Lawas Utara.

Location and Time of Research

1. Research Location

This research was conducted on a group of class II students of MIN 8 Padang Lawas Utara.

2. Research Time

In conducting this research, the author allocated time from January - April 2024.

Population and Research Sample

1. Research Population

According to Notoatmodjo (2017), the entire research object studied is the research population. The population in this study is the entireThere are 30 students of Class II State MI 8 North Padang Lawas.

2. Research Sample

The sample in this study was all class II students of MIN 8 Padang Lawas Utara, totaling 30 students (total population).

Types and Methods of Data Collection

1. Type of Data Collection

a. Primary Data

Primary data is data obtained directly from students by giving a questionnaire before playing snakes and ladders to determine the level of knowledge of class II students of MIN 8 Padang Lawas Utara. The form of this research questionnaire is multiple choice which has 2 answer choices and each has a certain value, namely:

1. For the correct answer the value is 1 (one)
2. For wrong answers the score is 0 (zero)

For the final assessment, the calculation has 3 categories (good, moderate, bad):

- a. Good category = 7-10

b. Medium category = 4-6

c. Bad category = 0-3

$$\begin{aligned}\text{Formula} &= \frac{\text{skor maksimum} - \text{skor minimum}}{3} \\ &= \frac{10 - 0}{3} \\ &= 3.3\end{aligned}$$

Furthermore, by giving a questionnaire after the snake and ladder game to determine the level of knowledge of class II students of MIN 8 Padang Lawas Utara. The form of this research questionnaire is multiple choice which has 2 answer choices and each has a certain value, namely:

a. For the correct answer the value is 1 (one)

b. For wrong answers the score is 0 (zero)

For the final assessment, the calculation has 3 categories (good, moderate, bad):

a. Good category = 7-10

b. Medium category = 4-6

c. Bad category = 0-3

$$\begin{aligned}\text{Formula} &= \frac{\text{skor maksimum} - \text{skor minimum}}{3} \\ &= \frac{10 - 0}{3} \\ &= 3.3\end{aligned}$$

b. Secondary Data

Secondary data is data taken from the school where the research was conducted, namely in the form of an interview with the Principal of MIN 8 Padang Lawas Utara.

2. Data Collection Method

The method of data collection from this study was by conducting direct observation to students of MIN 8 Padang Lawas Utara by distributing questionnaires before the snakes and ladders game to students to be filled out by the students and distributing the second questionnaire after the snakes and ladders game. This collection was assisted by two volunteers.

Data Processing and Analysis

1. Data Processing

The data that has been obtained is then processed manually through several important stages. The first stage is editing, which is the process of re-checking the completeness of the data that has been collected. In this process, several aspects that need to be considered include the completeness of the data, continuity between data, and uniformity of the format or content of the data. The edited data must be easily readable and understood by others so that it can be used in the next process. The next stage is coding, which is giving codes to the data or the coding process with the aim of facilitating the process of processing and analyzing the data. After the data is coded, the next process is tabulating, which is grouping data into a table based on certain characteristics or categories. Data or codes that have gone through the editing and coding stages are then arranged in a table to facilitate reading and analyzing the research results.

2. Data Analysis

After the data processing process is complete, the next step is to analyze the results of the questionnaire data. This analysis begins by calculating the number of respondents who are included in the criteria of good, moderate, and poor knowledge based on the answers of all students in class II of MIN 8 Padang Lawas Utara. Furthermore, calculations are carried out to determine the final results of the overall level of knowledge of the students. This process aims to obtain a clear picture of the distribution of students' levels of knowledge regarding the topics studied, so that it can be used as a basis for evaluation and follow-up learning.

4. RESEARCH RESULT AND DISCUSSIONS

After collecting data on 30 students of class II MIN 8 Padang Lawas Utara, Bangkudu Village, Portibi District, the following data results were obtained:

Table 2

Frequency Distribution of Tooth Brushing Knowledge Level Before Dental Health Promotion Using Snakes and Ladders Media in Class II Students of MIN 8 Padang Lawas Utara

Knowledge Criteria	Number (n)	Percentage (%)
Good	2	6.66
Currently	14	46.66
Bad	14	46.66
Amount	30	100

From the table above, it can be seen that students' knowledge about brushing their teeth before the promotion using the snakes and ladders media, data was obtained that the majority of respondents had moderate and poor criteria, namely 14 people (46.66%), with good criteria as many as 2 people (6.66%).

Table 3

Frequency Distribution of Knowledge Level About Tooth Brushing After Dental Health Promotion Using Snakes and Ladders Media in Class II Students of MIN 8 Padang Lawas Utara

Knowledge Criteria	Number (n)	Percentage (%)
Good	30	100
Currently	0	0
Bad	0	0
Amount	30	100

From the table above, it can be seen that all respondents, namely 30 people (100%), have knowledge with good criteria and none have moderate or poor criteria.

DISCUSSION

The results of the study showed that the respondents' knowledge about brushing their teeth before the counseling was conducted, the data obtained were good criteria for 2 people (6.66%), moderate criteria for 14 people (46.66%) and poor criteria for 14 people (46.66%). Meanwhile, the students' knowledge about brushing their teeth after the counseling was conducted, the data obtained was that all respondents, namely 30 people (100%) had good criteria.

Promotion of dental and oral health is a planned and directed effort to create an atmosphere so that a person or group of people are willing to change old behavior that is less beneficial for dental health to be more beneficial for dental and oral health. (Budiharto, 2010).

Snakes and ladders is one of the play therapies: cooperative play. Cooperative play is playing together with clear rules so that a leader and member relationship is formed (Wong, 2009). Knowledge is the whole of thoughts, ideas, concepts and understanding that humans have about the world and its contents, including humans and their lives (Notoatmodjo. S 2010).

The effect of the snakes and ladders game on the knowledge of brushing teeth in grade II students, based on the results of the study it was found that there was a significant increase in children's knowledge of brushing teeth after playing the snakes and ladders game, the activity itself without any coercion will be remembered better by children, so that the snakes and ladders game can increase knowledge of brushing teeth.

After being given the snakes and ladders game, it is effective in improving knowledge, attitudes, and application of tooth brushing actions in school-age children. This is because when playing the snakes and ladders game, it involves the five senses, so it is more interesting, easier to understand, more fun because children play while learning (Sari, Ulfian & Dian, 2010).

CONCLUSION

The conclusions that can be obtained from this research are as follows: The majority of students' knowledge about brushing their teeth before counseling with snakes and ladders was in the moderate category, namely 14 people (46.66%), in the good criteria as many as 2 people (6.66%), and in the bad criteria as many as 14 people (46.66%). Meanwhile, after conducting counseling using snakes and ladders, all respondents, namely 30 people (100%) had a level of knowledge with good criteria, and none had moderate or poor criteria. The results of the study indicate that there is an increase in respondent knowledge after counseling with the snakes and ladders method. Where snakes and ladders are a tool for conducting more effective promotions to provide information to respondents or other communities.

Suggestion

It is hoped that the school can: Increasing students' sources of knowledge by adding school facilities and infrastructure in the form of snakes and ladders. In order to pay more attention to the dental and oral health of students by collaborating with the local health center in carrying out School Dental Health Efforts (UKGS), especially the correct and proper method of brushing teeth. It is expected that students can apply the knowledge they have gained about brushing their teeth in their daily lives to achieve optimal dental and oral health.

REFERENCES

- Arsyad, Azhar. 2002. Learning Media, 1st edition. Jakarta: PT. Raja Grafindo Persada.
- Asio, The Effect of Training Using the Tooth Brushing Module on the Knowledge of Teachers at Unggul Sakti Elementary School, Jambi City, Dental Health Journal, 2016; 3(1), pp. 1-4.
- Budiharto. 2010. Introduction to Health Behavior Science and Dental Health Education. Jakarta: EGC. Edition II page 7.
- Gapdianto, R, Oral Hygiene Status and Tooth Brushing Behavior of Elementary School Children 1 Malayang, e-Gigi (eG), 2015;3 (jan-juni),pp. 130-138.
- Hidayat, R., & Tandiar, A.(2016). Dental and oral health. Yogyakarta: Andi Publisher.
- Mubarak, WI, et al. 2007. Health Promotion: An Introduction to the Teaching and Learning Process in Education. Yogyakarta; Graha Ilmu.
- Notoadmdjo, S.2007. Health Promotion and Behavioral Science. Jakarta: Rineka Cipta.
- Notoadmdjo, S.2017. Health Research Methodology. Jakarta: Rineka Cipta.
- Pintauli, S., Hamada, T. Towards healthy teeth and mouth. Prevention and Maintenance. USU Press. Medan:2007.
- Riskesdas 2018. Health Research and Development Agency, Ministry of Health of the Republic of Indonesia 2018. Jakarta.
- Saraswati, S. 2010. The Effect of Snakes and Ladders Play Therapy on Social Interaction Skills in Autistic Children at Cakra Autisme Therapy Surabaya. Thesis, Faculty of Nursing, Airlangga University.
- Sari, Ulfiana, & Dian. 2010 The Effect of Tooth Brushing Health Education with the Snakes and Ladders Simulation Game Method on Changes in Knowledge, Attitudes, and Application of Tooth Brushing Actions of School-Aged Children at Elementary Schools in Paron Ngawi Region.
- Setyaningsih.2007. Maintaining Dental and Oral Health. Jakarta: CV. Sinar Cemerlang Abadi.
- Wong, D,L.2009. Textbook of Pediatric Nursing. Vol 1. Jakarta: EGC.
- World Health Organization, Maternal mortality. In: Reproductive Health and Research, editor. Geneva: World Health Organization ; 2014.
- Yusuf, S. 2011. Psychology of Child & Adolescent Development. Bandung: PT Remaja Rosdiakarya Offset.