



THE INFLUENCE OF DENTAL CARIES BOOKLETS AND THEIR PREVENTION ON KNOWLEDGE AND PRACTICES OF ELEMENTARY SCHOOL STUDENTS IN PREVENTING DENTAL CARIES

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Abstract

The greatest challenge currently facing the field of dentistry and oral health is dental caries, which is caused by a number of interacting (multifactorial) factors, including elements outside the mouth that are indirectly related to dental caries, among others. Knowledge and techniques pertaining to the prevention of dental caries. The dissemination of dental health education using various educational media, such as booklets, is one method to increase the knowledge and practice of school-aged children in maintaining dental health, particularly in caries prevention. The purpose and benefit of this research are to produce a booklet that can be used in dental health education, particularly in preventing dental caries in elementary school students, and to assess the effect of the booklet on knowledge and practice in preventing dental caries. This research was conducted on fifth-grade students at the State Elementary School 03 Pondok Labu, South Jakarta. The type of research used is a quasi-experimental research design with a Non-randomized control group pre-test and post-test design. The study had a total sample size of 148 students, with 74 students in the treatment group and 74 students in the control group. Using the Wilcoxon Signed Rank and Mann-Whitney tests, we analyzed the data. The results demonstrated that the dental caries booklet and its prevention could be used as a medium for dental health education to increase the knowledge and practice of elementary school students regarding dental caries and its prevention, and that there is a significant relationship between the provision of the booklet media and increased knowledge (p-value = 0.006) and practice (p-value = 0.006) and practice (p-value = 0.030) students in the effort to prevent dental caries.

Keywords: Booklet, Dental Caries Knowledge, Practice.

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1. INTRODUCTION

Oral and dental hygiene are essential components of overall health. Dental health is also a component of general health that cannot be neglected, as dental and oral health influence the optimal growth and development of children in order to produce healthy, intelligent, and productive individuals with a high level of combativeness. Neglected dental and oral health can result in a variety of mouth diseases that can affect all age groups and are progressive and accumulative (Karimbux et al., 2023).

Data released by the Oral Health Media Center in April 2012 shows that 60-90% of school-age children and almost all adults worldwide have dental problems. According to Riskesdas, there was an increase in the prevalence of active caries from 43.4% in 2007 to 53.2% in 2013, where the largest increase occurred in the age group of 12 years. In addition, it is also known that in the age group of 12 years, an average of 2 permanent teeth have caries (Ghotane et al., 2021).

Dental caries is a disease induced by multiple interacting factors (multifactorial), including both the primary factors inside the mouth and external elements indirectly related to caries. Factors outside the mouth that affect caries include gender, knowledge, education level, economic level, environment and behavior related to dental health (Tokajuk et al., 2022). According to Reich, one of the factors outside the mouth that influence the development of caries is behavioral factors, namely eating habits and maintenance of dental hygiene, while according to WHO, behavioral risk factors that can affect dental and oral health include oral hygiene maintenance practices and sugar consumption in terms of amount, frequency and type (Petersen, 2005).

Riskesdas national survey data in 2007 showed a relationship between eating

patterns and brushing habits with dental caries, where it is known that the more often a person eats sweets, the more they tend to have dental caries. Then from the results of the Riskesdas, it is known that the Indonesian population's correct behavior or habit in brushing their teeth is only 2.3%, while in DKI Jakarta, it is only 3.5%. In the 12-year age group, only 1.8% habitually brushed their teeth properly (Myint et al., 2020).

Elementary school age is the right time for a child to be trained to maintain dental and oral hygiene, namely through proper brushing and reducing sugary and sticky foods. Elementary school-age children aged 6-12 years are a vulnerable age group that needs attention because, during this period, there are primary and permanent teeth simultaneously in the mouth (Suprabha et al., 2021). The school years are crucial for the growth and physical development of children. This period is also known as the critical period because it is during this time that infants begin to form habits that typically persist into adulthood (Mahmood et al., 2021).

One way of intervention in improving children's behavior in maintaining dental health is by providing dental health education. Dental and oral health education encompasses all efforts or activities designed to encourage healthy dental and oral hygiene practices and raise public awareness of dental and oral health (Darwita et al., 2011).

In the process of health education, including dental health, which leads to the achievement of educational goals, namely behavioral change, it is influenced by many factors, namely in addition to the input itself, the method, material or message, the educator or officer who does it and educational aids/media. To achieve an optimal result, these factors must work together in harmony (Sjahrudin et al., 2022).

Health education media are

essentially educational aids, which are channels to convey health messages because these tools facilitate the reception of health messages for the community. Many media can also be used as educational aids, including in dental health education, such as Booklet media (Arede et al., 2019). Media Booklet is a printed or printed media containing pictures and writing in the form of a book with a thickness of 20-25 pages which is addressed to many people and the general public to convey messages that are promotional, recommended, or prohibited to the mass audience (Valentini et al., 2022).

The use of booklets in delivering dental health education in the Pondok Labu area has never been done until now. The limited number of dental health workers to provide dental health education in each elementary school can be overcome and assisted by these booklets containing dental health (Lim et al., 2021).

Based on the above description, researchers are interested in creating booklets about dental caries and their prevention that can be used in dental health education for elementary school students, and then determining how the booklet media influences the knowledge and practices/actions of elementary school students regarding preventing the occurrence of dental caries on the teeth.

LITERATURE REVIEW

Dental Caries

Dental caries (cavitation) is an area of decay inside the tooth that occurs due to a process that gradually dissolves the enamel (the hard outer surface of the tooth) and progresses to the inside. Caries is caused by the interaction of bacteria on the tooth surface, plaque, and diet (especially carbohydrate components that can be fermented by plaque bacteria into acid, especially lactic and acetic acids), resulting in demineralization of the tooth's hard

tissue and requiring adequate time for this to occur (Mohabatpour et al., 2022).

Dental caries or cavities is a disease in the oral cavity caused by the destructive activity of bacteria against the hard tissue of the teeth (enamel, dentin and cementum). If this damage is not treated immediately, it will spread and expand. If left unchecked, cavities cause pain, tooth loss, infection, and even death (Mosaddad et al., 2019).

The impact of dental caries is very significant on a person's dental health and general well-being. The main effect of dental caries is severe pain and discomfort, especially when chewing food or drinking hot or cold drinks. In addition, untreated dental caries can lead to dental pulp infection, which requires root canal treatment or even tooth extraction (Chaudhary et al., 2021). Uncontrolled dental caries can also cause severe structural damage to teeth, such as cracks or splits, which require expensive and complex dental restorations. In the long term, untreated dental caries can contribute to periodontal disease, digestive disorders, and even general health problems like heart disease. Therefore, prevention and proper treatment of dental caries are very important to maintain healthy teeth and the general well-being of a person (Yu et al., 2023).

Dental caries begin with the appearance of brown or white spots, which then develop into brown. This hole occurs due to the melting of tooth minerals due to the fermentation reaction of carbohydrates, including sucrose, fructose, and glucose, by several acid-producing bacteria (Mohd Shukri et al., 2022).

According to Tarigan R, the factors that influence the occurrence of caries are as follows:

Heredity

A study of 12 pairs of parents with excellent dental health revealed that 11 pairs of parents had children with relatively good dental health. In addition, only 1 (one) pair

of parents with a high percentage of caries had a child with healthy teeth, 5 (five) pairs had a child with a moderate percentage of caries, and the remaining 40 pairs had a child with a high percentage of caries (Zolfaghari et al., 2021). However, with recent advancements in caries prevention techniques, for example, Topical Application (Fluor Coating), the hereditary factor in the process of caries occurrence can actually be reduced (Feng et al., 2022).

a. Race

Race's influence on dental caries' occurrence is very difficult to determine. However, the condition of the jaw bones of a particular race may be associated with an increasing or decreasing percentage of caries (Karam et al., 2023). For example, in certain races with narrow jaws, the teeth in the jaws often grow irregularly. Of course, irregular teeth will make cleaning teeth difficult, increasing the percentage of caries in that race (Aliakbari et al., 2021).

b. Gender

From observations made by Milhahn – Turkehem on M1 teeth (first molars), the results were obtained:

- 1). In males, caries on the M1 Right as much as 74.5% and M1 Left as much as 77.6%.
- 2). In women, there are caries on the M1 Right as much as 81.5% and M1 Left as much as 82.3%.

These results show that the percentage of dental caries in women is higher than in men. The percentage of left molar caries is higher than the right molar due to the chewing and cleaning factors of each part of the tooth (Que et al., 2021).

c. Age

Throughout life, there are 3 phases of age seen from the point of view of the teeth:

- 1). In the mixed dentition period, the 1st molar is most often affected by caries.
- 2). 14 to 20 years of age is the period of puberty (adolescence). Changes in hormone levels during puberty can result in swollen gums, leading to a decline in oral hygiene. This

causes the percentage of caries to be higher (Venkataraman et al., 2022).

- 3). Age between 40-50 years. At this age, there has been retraction or decreased gums and papillae, so food remains are often more difficult to clean (Stoica et al., 2022).

Booklet

The term booklet is a combination of a leaflet and a book or a book with a small format like a leaflet, but the way the material is presented is shorter than a book. A booklet is printed media as a book that provides any information the compiler wants to convey (Carvalho et al., 2020). Furthermore, according to Permatasari, booklets are communication media that are promotional, suggestive, prohibited to the mass audience and in printed form, with the aim that the public as objects can understand messages through the media. A booklet is a small book with at least five pages but no more than forty-eight pages, excluding the cover (Caldevilla-Domínguez et al., 2021).

Booklets contain important information whose contents must be clear, firm, easy to understand and will be more interesting if accompanied by pictures. Booklets are one type of graphic media, namely picture or photo media. According to Simamora, a booklet is a small (half a quarto) and thin book with no more than three double-sided sheets containing writing and pictures. The structure of the contents of a booklet resembles that of a book (introduction, contents, closing), it's just that the way the contents are presented is much shorter than that of a book (Marder et al., 2021). Based on the explanations of experts, booklets are graphic media in the form of pictures or photos and written media containing important information that is clear, simple, easy to understand, short, concise and attractive in the form of a small book (half quarto) which has at least five pages but no more than forty-eight

pages excluding the cover (Weis et al., 2019).

According to Roza, the booklet has several functions, as follows:

- a. Generate interest in educational goals.
- b. Helps overcome many obstacles.
- c. Help educational goals to learning more and fast.
- d. Stimulate educational goals to pass on messages received to others.
- e. Facilitate the delivery of educational language.
- f. Facilitate the discovery of information by the target education.
- g. Encouraging people's desire to know and then understand.
- h. Help clarify the understanding obtained (Menear et al., 2019).

There are two advantages of booklets, according to Roza, namely they can be studied at any time because they are designed like a book and can contain more information than posters. This was clarified by Ewles that there are nine more advantages of booklets, namely:

- a. It can be used as an independent learning medium.
- b. It can learn the contents easily.
- c. It can be used as information for family and friends.
- d. Easy to manufacture, reproduce, repair and adapt.
- e. Reducing the need to take notes.
- f. It can be made at a simple and relatively cheaper cost.
- g. Long-lasting.
- h. Has a wider capacity.
- i. It can be directed at a particular segment (Peitz et al., 2021).

Based on the explanation above, it can be concluded that booklets can be used as practical learning media because they can be taken anywhere and anytime, have easier material content, can be reproduced and is durable (Haleem et al., 2022).

2. METHODS

The type of research used is a quasi-experimental research design with a non-randomized control group pre-test and post-test design. With this design, the treatment and control groups were not randomly chosen. The total number of samples was 148 students. The research sample was determined by purposive sampling, namely the sampling method, to obtain certain criteria. The criteria in question are inclusion criteria and exclusion criteria. The inclusion of this study was students in fifth grade at SDN 03 Pondok Labu, South Jakarta, who had never received dental and oral health education before in the last year, were willing to be respondents and were present at the pre-test booklet counseling and post-test. While the exclusion criteria were if not a fifth grader at SDN 03 Pondok Labu, South Jakarta, had received previous dental and oral health education in the last year, were not willing to be a respondent and were not present at the pre-test, booklet and post-test counseling took place. The variables that will be examined in this study are the knowledge variable about dental caries and its prevention and the dental caries prevention practice variable in students. The treatment group will be given an intervention in the form of dental health education using a booklet, while in the control group, no intervention will be provided.

3. RESULT AND DISCUSSION

Research result

The preparation of the booklet on dental caries and its prevention has been carried out with the following view:

- a) The first part explains about teeth, which includes the definition of teeth, parts of teeth, functions of teeth, types of teeth and their functions.
- b) The second part explains dental caries, which includes the definition of dental caries, the causes of dental caries, the

course of dental caries, the effects of dental caries, and the treatment of dental caries.

- c) The third part explains how to prevent dental caries, including reducing sugary and sticky foods and drinks, increasing fibrous and watery foods, brushing teeth correctly and at the right time, using toothpaste containing fluoride, and going to the dentist regularly every six months.

Furthermore, the validity and reliability of the questionnaire were tested on fifth-grade students at SDN 16 Pondok Labu, South Jakarta, with a sample of 29 students. The questionnaire was initially constructed with 20 questions for

knowledge and ten for practice. However, only ten knowledge and five practice questions were valid from the validity test. Then the reliability test was carried out with the results of Cronbach's $\alpha = 0.673$, which r table (0.361) means reliable.

The Effect of Booklets on Knowledge of Elementary School Students in Preventing Dental Caries

The level of knowledge of respondents based on the results of the pre-test and post-test in the treatment group using the booklet media can be seen in Table 1 as follows:

Table 1. Knowledge Level of Booklet and Control Group Respondents

Variable		Total	
		N	%
Booklet group knowledge			
Pre-test	Well	33	44.59
	Not good	41	55.41
Posttest	Well	51	68.92
	Not good	23	31.08
Control group knowledge			
Pre-test	Well	47	63.51
	Not good	27	36.49
Posttest	Well	35	47.30
	Not good	39	52.70

Table 1 shows an increase in respondents' knowledge in the booklet group, with a good level from 44.59% at the pre-test to 68.92% at the post-test. Then there is also a decrease in the percentage of respondents with a poor level of knowledge from 55.41% at the pre-test to 31.08% at the post-test. Furthermore, the control group showed a decrease in the respondents' knowledge in the control group, with a good level from 63.51% at the pre-test to 47.30% at the post-test. Then it was also seen that there was an

increase in the percentage of respondents with a poor level of knowledge from 36.49% at the pre-test to 52.70% at the post-test.

The next step is to conduct a bivariate analysis to prove the hypothesis, namely the effect of the dental caries booklet and its prevention on elementary school student's knowledge of preventing dental caries. Before conducting the bivariate analysis, a normality test was carried out to ascertain whether the existing

data met the paired t-test assumptions, namely the normality assumption in pair differences (pair differences). The normality test for pre-test and post-test knowledge simultaneously with Kolmogorov-Smirnov is 0.000, and Shapiro Wilk is 0.001, which means that the data is not normally distributed (because

the test value is 0.05), then one alternative to performing bivariate analysis to answer the hypothesis is to test the Wilcoxon Signed Rank test. The results of the analysis of the difference in the average knowledge in the booklet group and the control group can be seen in Table 2 as follows:

Table 2. Analysis of Average Differences in Respondents' Knowledge of Dental Caries and its Prevention Before and After Education Booklet and Control Group

Knowledge	mean	Standard Deviation	Z	P value (95% CI)
Booklet Group				
Pretest	9.00	1,783	-5.014	0.000
Posttest	9.88	1,720		
Control Group				
Pre-test	9.85	1.541	-4,463	0.000
Post-test	8.76	2,520		

Table 2 shows an increase in the mean knowledge of respondents in the group given the booklet from 9.00 at the pre-test to 9.88 at the post-test. Based on the results of the Wilcoxon Signed Rank Test calculation, in the Booklet Treatment group, the Z value obtained was -5.014 with a P value (Asymp. Sig 2 tailed) of 0.000, which is smaller than 0.05, which means there is a significant difference in respondents' knowledge between pre-test and post-test in the booklet group.

It can be seen that there is a decrease in the mean of respondents' knowledge in the control group from 9.85 at the pre-test to 8.76 at the post-test. Based on the results of the Wilcoxon Signed Rank Test

calculation, in the Control group, the Z value obtained was -4.463 with a P value (Asymp. Sig 2 tailed) of 0.000, which is smaller than 0.05, which means there is a significant difference in knowledge between the pre-tests and post-test in the control group.

Furthermore, a second analysis was carried out using the Mann-Whitney test to determine the magnitude of the difference in knowledge between the booklet group and the control group at the time of pre-test and post-test. The results of data analysis using the Mann-Whitney Test technique before being given treatment (pre-test) in the booklet group and the control group are as follows:

Table 3. Knowledge Ranks Before and After Treatment

	research group	N	Mean Rank	Sum of Ranks
Before Treatment				
Respondent knowledge pre-test score	booklet	74	64.34	4761.50
	Control	74	84.66	6264.50
After Treatment				
Respondent knowledge post-test score	booklet	74	84.07	6221.00
	Control	74	64.93	4805.00

Based on Table 3 above, it was found that before treatment, the mean rank for knowledge data at the time of the pre-test for the booklet group was 64.34, while for the control group, it was 84.66. With each sum of ranks for the booklet group of 4761.50 and the control group of 6264.50. Meanwhile, after treatment, the mean rank for knowledge data at the post-test for the booklet group was 84.07, while the mean rank of knowledge at the time of the pre-test for the control group was 64.93. With each

sum of ranks for the booklet group of 6221.00 and the control group of 4805.00. The mean rank for knowledge data at the post-test for the booklet group was 84.07, while the mean rank for knowledge at the post-test for the control group was 64.93. With each sum of ranks for the booklet group of 6221.00 and the control group of 4805.00.

Further analysis obtained the results of statistical tests of knowledge after being treated as follows:

Table 4. Knowledge Statistics Test After Giving Treatment

Respondent knowledge post-test score	
Mann-Whitney U	2030,000
Wilcoxon W	4805,000
Z	-2.757
Asymp. Sig. (2-tailed)	.006

Table 4 shows the U value of 2030 and the W value of 4805. When converted to a Z value, the value is -2.757. The Asymp.Sig. (2-tailed) or P value is 0.006, meaning there is a difference in knowledge between the booklet and control groups at the post-test time.

Furthermore, to determine the degree of knowledge relationship between the booklet group and the control group after treatment, a **chi-square statistical test was carried out** (kai squared) to get the value of OR (Odds Ratio), with the following results (table 5).

Table 5. Distribution of Respondents by Booklet Group and Control with Knowledge

Research Group	Knowledge				Total		OR 95% CI	P value
	Well		Not good		N	%		
	N	%	N	%				
booklet	51	68.9	23	31.1	74	100	2,471 1.263-4,853	0.012
No Booklet	35	47.3	39	52.7	74	100		
Amount	86	58.1	62	41.9	148	100		

Chi-square statistical test results (kai squared) the value of OR = 2.471, meaning that respondents who were given a booklet had a chance of 2.471 times to have good knowledge compared to respondents who were not given a booklet.

Analysis of the Effect of Booklets on the Practice of Elementary School Students in Preventing Dental Caries

The practice of respondents based on the results of the pre-test and post-test in the treatment group using Booklet media can be seen in Table 6 as follows:

Table 6. Practice Level of Booklet and Control Group Respondents

Variable		Total	
		N	%
Booklet Group Practice			
Pre-test	Well	29	39.19
	Not good	45	60.81
Posttest	Well	36	48.65
	Not good	38	51.35
Control Group Practice			
Pre-test	Well	20	27.03
	Not good	54	78.97
Post-test	Well	21	28.38
	Not good	53	71.62

Table 6 shows an increase in the practice of the booklet group respondents with a good level from 39.19% at the pre-test to 48.65% at the post-test. Then it was also seen that there was a decrease in the percentage of respondents with a poor practice level from 60.81% at the pre-test to 51.35% at the post-test. The control group showed increased respondents' practice with a good level from 27.03% at the pre-test to 28.38% at the post-test. Then it was also seen that there was a decrease in the percentage of respondents with poor practice levels from 72.97% on the pre-test to 71.62% on the post-test.

The next step is to conduct a bivariate analysis to prove the hypothesis

that there is an effect of the dental caries booklet and its prevention on student practice in preventing dental caries. Before conducting the bivariate analysis, a normality test was carried out to ascertain whether the existing data met the paired t-test assumptions, namely the normality assumption in pair differences (pair differences). The normality test for pre-test and post-test knowledge simultaneously with Kolmogorov–Smirnov is 0.000, and Shapiro Wilk is 0.000, which means that the data is not normally distributed (test value 0.05), then one alternative to performing bivariate analysis to answer the hypothesis is the Wilcoxon test. Signed Rank test with the following results:

Table 7. Analysis of Differences in Respondents' Average Practices About Dental Caries and its Prevention Before and After Education Booklet and Control Group

Practice	mean	Standard Deviation	Z	P value (95% CI)
Booklet Group				
Pretest	3.03	1,260	-2.754	0.006
Posttest	3.28	1.350		
Control Group				
Pretest	2.77	1,200	-0.895	0.371
Posttest	2.85	1,224		

Table 7 shows an increase in the average practice value of respondents in the booklet group from 3.03 on the pre-test to 3.28 on the post-test. Based on the results of the Wilcoxon Signed Rank Test calculation, in the Booklet group, the Z value obtained is -2.754 with a P value (Asymp. Sig 2 tailed) of 0.006, which is smaller than 0.05, which means there is a significant difference between the pre-test and post-test. The control group also increased the practice mean from 2.77 at the pre-test to 2.85 at the post-test. Based on the results of the calculation of the Wilcoxon Signed Rank Test, in the Control group, the Z value

obtained is -0.895 with a P value (Asymp. Sig 2 tailed) of 0.371, which is greater than 0.05, which means there is no significant difference between the pre-test and post-test.

The second analysis was carried out using the **Mann-Whitney Test** to determine the magnitude of the differences in the practice of the booklet and control groups at the time of the pre-test and post-test. The results of data analysis using the **Mann-Whitney Test technique** before being given treatment (pre-test) in the booklet group and the control group are as follows:

Table 8. Practice Ranks Before and After Treatment

	Research Group	N	Mean Rank	Sum of Ranks
Before Treatment Respondent's practice pre-test score	booklet	74	79.03	5848.00
	Control	74	69.97	5178.00
After Treatment Practice Postets Score Respondent	booklet	74	81.95	6064.00
	Control	74	67.05	4962.00

Based on table 8 above shows that before the treatment, the mean rank for the data practice at the pre-test for the booklet group was 79.03, while the mean rank of practice at the pre-test for the control group was 69.97 with each sum of ranks in the booklet group of 5848,000. For the control group of 5178.00, it means that the practice between the booklet group and the control group before being given treatment showed a larger booklet group, while after treatment, the mean rank for practice data at the post-test for the booklet group was 81.95 while

the mean practice rank at the pre-test for the control group was 67.05 with each -each sum of ranks in the booklet group is 6064.00. For the control group is 4962.00, which means that the practice between the treatment group and the control group after treatment shows that the treatment/intervention group is greater.

The results of data analysis using the Mann-Whitney Test technique at the time after being given treatment (booklet) and the control group are as follows:

Table 9. Practice Statistics Test After Giving Treatment

Respondent practice post-test score	
Mann-Whitney U	2187,000
Wilcoxon W	4962,000
Z	-2.165
Asymp. Sig. (2-tailed)	.030

The table shows the U value of 2187 and the W value of 4962. When converted to Z value, the amount is -2.165. The Asymp. Sig. (2-tailed) or P value is 0.030, meaning there are differences in practice between the booklet and control groups at the post-test.

Furthermore, to determine the degree of practice relationship between the booklet group and the control group, a chi-square (kai squared) statistical test was carried out to obtain the OR (Odds Ratio) value, with the following results (table 18):

Table 10. Distribution of Respondents by Research and Practice Group

Research Group	Practice				Total		OR 95% CI	P value
	Well		Not good		N	%		
	N	%	N	%				
booklet	36	48.6	38	51.4	74	100	2,391 1.21-4.722	0.018
No Booklet	21	28.4	53	71.6	74	100		
Amount	57	38.5	91	61.5	148	100		

Chi-square statistical test results (kai squared) the value of OR = 2,391, meaning that respondents who were given a booklet had a 2,391 times chance to have good practice compared to respondents who were not given a booklet.

One way of intervention in improving children's behavior in maintaining dental health is by providing dental health education. Dental and oral health education is all efforts or activities to influence someone to behave well for dental and oral health and increase public awareness of dental and oral health. (Darwita et al, 2011).

A process of health education, including dental health, which leads to the achievement of educational goals, namely behavior change, is influenced by many factors, namely in addition to the input itself also the method, material or message, educators or officers who do it and educational aids/media. To achieve an optimal result, these factors must work together in harmony (Sjahrudin et al., 2022). Health education media are essentially educational aids, which are channels to convey health messages because these tools facilitate the reception of health messages for the community. Many media can also be used as educational

aids, including in dental health education, such as Booklet media (Arede et al., 2019).

The purpose of this study was to produce a booklet containing an explanation of dental caries and its prevention for elementary school students, as well as to analyze the effect of the booklet on the knowledge and practice of elementary school students to prevent dental caries. The results of this study indicate an increase in knowledge and practice in the group given dental health education with booklet media.

One alternative solution that will provide insight and information to develop learning media to increase children's knowledge and practice in preventing dental caries is to use booklet media (de Jong-Lenters et al., 2019). As the results of this study stated from the analysis carried out with the Wilcoxon Signed Ranks Test and the Mann Whitney U test, it was found that the booklet media about dental caries and its prevention influenced increasing the knowledge and practice of elementary school students in efforts to prevent dental caries (George et al., 2019).

The booklet is a medium for delivering health messages in the form of books with a combination of writing and images that aims to convey promotional,

suggestion, and prohibition messages to the mass audience and in the form of prints whose ultimate objective is for the public as objects to comprehend and obey the messages contained in the media (Baumann et al., 2021). The benefits of booklet media are that the information is more comprehensive, detailed, lucid, and educational. In addition, the booklets used as educational media can be taken home for repeated reading and storage. The preparation of this booklet is tailored to the needs and conditions of the child and is combined with pictures to attract children's attention and avoids boredom in reading (Pangrazuio & Sefton-Green, 2020).

The advantage of a booklet is that because it is a print media, the costs incurred for its manufacture are cheaper when compared to using audio, visual or audio-visual media. In addition, the booklet process to arrive at the object can be done at any time and adapted to existing conditions. In addition, another advantage is that it is more detailed and clear because it can review more of the messages it conveys (Garcia Leiva & Albornoz, 2021).

This study's findings are consistent with research conducted, among others, by Agustin on the efficacy of health education booklet media on parental knowledge, which indicates that there is a significant difference in parental knowledge before and after receiving health education booklet media (Hermida et al., 2021). Then, Safitri's research on the effect of nutrition education with lectures and booklets on increasing the nutritional knowledge and attitudes of overweight adolescents revealed discrepancies in the increase of knowledge and attitudes before and after nutrition education with lectures and booklets (Nikmah et al., 2022).

4. CONCLUSION

The media booklet on dental caries and its prevention can be used as a learning

medium in dental health education for elementary school students to increase students' knowledge and practice to prevent dental caries. There was a statistically significant difference in the level of knowledge between the pre-test and post-test ($p = 0.006$). The analysis results obtained the value of $OR = 2.471$, meaning that respondents who were given a booklet had a chance of 2.471 times to have good knowledge compared to respondents who were not given a booklet. There was also a statistically significant difference in the level of practice between the pre-test and post-test ($p = 0.030$). The analysis results also obtained an OR value of 2.391, meaning that respondents who were given a booklet had 2.391 times the opportunity to have good practice compared to respondents who were not given a booklet.

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