

COMIC AS A MEDIA FOR DENTAL AND ORAL HEALTH EDUCATION IN PRIMARY SCHOOL STUDENTS

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ABSTRAK

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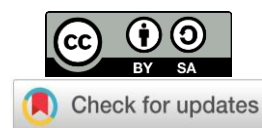
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Abstract:

Elementary school-age children often lack knowledge about dental and oral hygiene, leading to neglect in maintaining their health. To address this, engaging health promotion media, such as comics, can be utilized to enhance their understanding. This quasi-experimental study employed a two-group pre-test-post-test design with 87 elementary school students, divided into an experimental group (educated using comics) and a control group (educated using leaflets). A 20-question questionnaire assessed knowledge levels before and after the intervention. Results showed an increase in knowledge in both groups, with a significantly higher improvement in the comic group compared to the leaflet group. Unpaired T-test analysis confirmed a statistically significant difference ($p=0.000$, $p<0.05$), indicating that comics are more effective than leaflets in enhancing dental health knowledge. The study concludes that comic-based health promotion significantly improves oral hygiene awareness among elementary school children, suggesting its potential as an effective educational tool.

Abstrak:

Anak-anak usia sekolah dasar sering kali kurang memiliki pengetahuan tentang kebersihan gigi dan mulut, yang menyebabkan kurangnya perhatian dalam menjaga kesehatan mereka. Untuk mengatasi hal ini, media promosi kesehatan yang menarik, seperti komik, dapat digunakan untuk meningkatkan pemahaman mereka. Penelitian kuasi-eksperimental ini menggunakan desain pre-test post-test dua kelompok dengan 87 siswa sekolah dasar yang dibagi menjadi kelompok eksperimen (diedukasi menggunakan komik) dan kelompok kontrol (diedukasi menggunakan leaflet). Penilaian tingkat pengetahuan dilakukan sebelum dan sesudah intervensi menggunakan kuesioner berisi 20 pertanyaan. Hasil penelitian menunjukkan peningkatan pengetahuan pada kedua kelompok, dengan peningkatan yang lebih signifikan pada kelompok yang menggunakan komik dibandingkan dengan kelompok yang menggunakan leaflet. Analisis uji T tidak berpasangan menunjukkan perbedaan yang signifikan secara statistik ($p=0,000$; $p<0,05$), yang mengindikasikan bahwa komik lebih efektif dibandingkan leaflet dalam meningkatkan pengetahuan kesehatan gigi. Penelitian ini menyimpulkan bahwa promosi kesehatan berbasis komik secara signifikan meningkatkan kesadaran akan kebersihan gigi dan mulut pada anak-anak sekolah dasar, sehingga berpotensi menjadi alat edukasi yang efektif.



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INTRODUCTION

Based on the 2023 Indonesian Health Survey (SKI), the Ministry of Health has collected data on various parameters of public dental and oral health and obtained results that the national incidence of dental and oral health problems is 43.6%. According to data from the World Health Organization (WHO) in 2023, 514 million children suffer from caries in primary teeth. The incidence of dental caries in the 10-14 year group in Indonesia is 37.2% [1]. Dental caries is a disease caused by demineralization lesions in the hard tissues of the teeth, namely enamel and dentin (Ministry of Health, 2019). The prevalence of caries in South Sulawesi is 56.4%, while for the Palopo area it is 58.42%. The prevalence of caries in South Sulawesi based on ages 10-14 years is 37.2% (schoolage children)[2].

At school age, children experience a period of growth and development, which leads to increased physical activity such as play and sports. The elementary school period is very important for the growth and physical development of children aged 6-12 years [3]. Usually, elementary schoolage children tend to eat and snack carelessly and are accustomed to overeating. Food commonly consumed by elementary school students is often cariogenic. Cariogenic foods are foods that contain high amounts of sugar, such as sweet and sticky snacks with various attractive appearances. Excessive and continuous consumption of sweet foods can cause tooth decay [4]. Children aged between 6 and 14 years are very susceptible to tooth decay because it is during the tooth growth phase that the transition from milk teeth to permanent teeth occurs [5][6]. In Indonesia, children still show low interest in oral health because they do not have the necessary knowledge about dental care, causing them to neglect oral hygiene. 22.8% of the population in Indonesia brush their teeth, while only 77.2% do it at the right time, as shown by [7].

The Directorate of Health Promotion has utilized the role of the community to implement programs that can improve dental and oral health through supportive, preventive, curative and rehabilitative measures. Preventive measures, such as health promotion, aim to reduce the current prevalence of dental problems as well as collaborating with the Indonesian Dentists Association (PDGI) in a twice-a-year dental check-up program and the School Dental Health Business (UKGS) initiative,[8] [9] is optimistic that this initiative will address issues related to dental and oral health.

Media is needed for health promotion, which aims to increase general knowledge about dental and oral health. Media is a tool used to convey knowledge, material and health messages from health workers in health promotion activities [10][11]. Health promotion through the media is expected to increase individual, group and community knowledge about maintaining oral and dental health to improve health. The choice of media for health promotion must be targeted, effective and attractive[12]. Comics are an interesting learning tool for children in elementary school and can help expand their knowledge. Comics are flexible and user-friendly print media for school-age children and function as educational content [13]. Comics are seen as a form of media that can attract readers' attention by combining captivating text and images, making it more accessible for readers, especially children, to understand the content. In addition, comics function as a form of entertainment, with suggested storylines and promotional content [14].

Based on the information above, researchers will investigate the impact of a behavior change campaign using comic media on knowledge of tooth decay among students at SDN 29 Songka, Palopo City. It is hoped that the government will consider the results of this research to increase awareness about preventing dental and oral diseases among elementary school children.

RESEARCH METHOD

The research approach used in this investigation was quasi-experimental with a pre-post-test design in two groups. A two-group pre-posttest design involves an experiment with two comparison groups. In this design, groups are treated differently based on their grouping. Before being given treatment, these groups will carry out a pre-test so that the results of the intervention carried out can be known accurately. This research was carried out at SDN 29 Songka which is in the Wara Selatan sub-district, Palopo City [15]. The population in this study were 87 students in grades 4 and 5 of SDN 29 Songka. The sample in this research is total sampling. The sample for this research was students in grades 4 and 5 of SDN 29 Songka, Palopo City. The reason for choosing grades 4 and 5 as research samples was due to considerations of the comprehension power and level of understanding of the sample. Inclusion criteria: participate in pre-test, counselling and post-test activities; students who are physically and mentally healthy. Exclusion criteria: students who are not fluent in reading and writing. This study will use a multiple choice questionnaire for pre-test and post-test with 20 questions related to dental and oral health

RESULT AND DISCUSSION

Univariate analysis in this research is to see the characteristics of respondents in the form of age and gender which are presented in tabular form as in table 4.1 for age characteristics of respondents and table 4.2 for gender characteristics.

Table 1.
Age Frequency in The Comic and Leaflet Group

Age	Group								Amount	
	9		10		11		12			
	year		years		years		years			
	s				old		old			
	n	%	n	%	n	%	n	%	n	%
Comic	3	6,7	19	42.2	16	35.6	7	15.5	45	100
Leaflets	1	2,4	13	30.9	23	54.7	5	12	42	100

Based on table 4.1, shows the age distribution of respondents in the comics group with the highest age being 10 years, amounting to 19 people (42.2%) and in the leaflet group the highest age being 11 years amounting to 23 people (54.7%).

Table 2.
Gender Frequency in the comic group and leaflet group

Group	Gender				Amount	
	Man		Woman		n	%
	n	%	n	%		
Comic	24	53.3	21	46.7	45	100
Leaflets	20	47.6	22	52.4	42	100

Table 2 shows that the comics group had more male respondents, 24 (53.3%) than the number of female respondents, while in the leaflet group, there were more female respondents, 22 (52.4%) than the number. male respondents. Respondents' level of knowledge was grouped based on the following categories:

1. Good category, if the average value of correct answers is: 76 - 100
2. Sufficient category, if the average value of the correct answers is: 56 - 75
3. Poor category, if the average value of the correct answers is: <56

Table 3.
Frequency Distribution of Respondents based on Level of Knowledge in the Comic Treatment Group

Knowledge level	Pre-Test		Post-Test	
	N	%	N	%
Not enough	29	64.4	0	0
Enough	12	26.7	16	35.6
Good	4	8.9	29	64.4
Total	45	100.0	45	100.0

Based on Table 3, it is known that 29 people (64.4%) of respondents had an insufficient level of knowledge when carrying out the pretest. Meanwhile, when the post-test was carried out, there were no more respondents who fell into the category of low level of knowledge. When the post-test was carried out, 29

respondents (64.4%) fell into the good knowledge category.

Table 4.
Frequency Distribution of Respondents
based on Level of Knowledge in the Leaflet
Treatment Group

Knowledge level	Pre-Test		Post-Test	
	N	%	N	%
Not enough	34	81.0	16	38.1
Enough	7	16.7	20	47.6
Good	1	2.4	6	14.3
Total	42	100.0	42	100.0

Based on Table 4, it can be seen that 34 people (81%) of respondents fell into the poor knowledge category during the pre-test and only 1 person (2.4%) had a good level of knowledge. However, when the post-test was carried out, 6 people (14.3%) of respondents fell into the good knowledge category.

The bivariate test used is the paired T-test (paired t-test) seen in Table 5 and the unpaired T-test (independent t-test) in Table 6.

Table 5.
Level of Knowledge Before and After
Intervention Using Comics and Leaflets
(Paired T-Test Results)

Group	N	R Pre	R Post	Dif.	IK 95%	p
Comic	45	54.1	81.5	27.4	23.6-31.2	0,000*
Leaflets	42	48.9	63.2	14.3	9.6-18.9	0,000*

Table 5 presents the results of the paired T-test for the group that was intervened with comics and the group that was intervened with leaflets. In the comic group, the paired T-test gave significant results with $p = 0.000$. In the leaflet group, the paired T-test also yielded a p-value of 0.000. It can be concluded that there was a significant increase in knowledge in the comic group and leaflet group.

Table 6.
Unpaired T-Test Results between
Interventions using comics and leaflets

Group	N	Average	Dif.	IK 95%	p
Comic	45	81.5	18.3	12.8-23.8	0,000
Leaflets	42	63.2			

Through analysis of table 6, it was found that the p-value was 0.000 ($p < 0.05$) indicating that there was a significant difference in average knowledge between the comic and leaflet treatment groups. In the comic treatment group, the average post-test result was 81.5, while in the leaflet treatment group, it was 63.2, as shown in the table. Therefore, it can be concluded that the average value of the comic treatment group is higher than the leaflet treatment group.

Table 1 presents the distribution of research respondents by age, revealing that the majority were 10–11 years old. According to [16], children aged 7–11 begin developing logical thinking abilities, making them receptive to behavior change campaigns such as comic-based education, which contributed to the observed increase in post-test scores. Additionally, the 10–12-year age range is an optimal period for health promotion and education, as children at this stage refine motor skills essential for tasks like proper tooth brushing [17]. Furthermore, cognitive development progresses with age, potentially enhancing knowledge acquisition, as noted [1].

In table 2, it is shown that in the comic group, there were 24 male respondents or (53.3%) more than female respondents, while in the leaflet group, there were 22 more female respondents (52.4%) than female respondents. man.

Before and after the intervention using comic media, the number of people with the level of knowledge in table 4.5 increased from 4 (8.4%) to 29 (64.4%) out of a total of 45 people. When the pre-test was carried out, 29 people (64.4%) had a lack of knowledge, and after intervention

with comic media and a post-test, there were no respondents who fell into the category of lacking knowledge. In Table 4, it is shown that respondents' knowledge increased by 11.9% in the group of respondents in grades IV and V of elementary school, after intervention through leaflet media, from 1 person (2.4%) to 6 people (14.3%). This shows that a person's knowledge can be expanded from ignorance and lack of knowledge into something positive using comic and leaflet media. According to Haq's [3] study, the proportion of respondents in the "very good" category increased from 16 of 40% to 34 of 85% after receiving comic media.

Table 5 presents the mean difference in knowledge scores between the comic and leaflet treatment groups. In the comic group, the average score increased from 54.1 (pre-intervention) to 81.5 (post-intervention), reflecting a mean gain of 27.4 points. In contrast, the leaflet group showed an increase from 48.9 (pre-intervention) to 63.2 (post-intervention), with a smaller mean difference of 14.3 points. These results demonstrate that comics were significantly more effective than leaflets in improving knowledge scores. This finding aligns with the study by Hamida et al., where the comic-based intervention group exhibited a greater knowledge improvement (16.14 to 18.77) compared to the lecture-based group (15.94 to 17.06). The effectiveness of comics is further supported by [18], who emphasize that visual media rich in images—such as colored comics—are particularly engaging for elementary school children, enhancing learning retention and appeal.

Analysis using the unpaired T-test resulted in differences in the level of knowledge between the comic group and the leaflet group, with a p value of 0.000. The p value <0.05 indicates that there is a significant difference in increasing knowledge between the comic group and the leaflet group. This provides information that health promotion using comics has a more significant impact than using leaflet

media. because comics are more interesting, have a storyline and are easier for students to understand. Health education using comic media makes it easier for children to understand the message the author wants to convey using their imagination. This is following the theory of cognitive development of elementary school students at certain operational stages. Children at this stage can easily learn and remember well things they have experienced themselves[16].

Meanwhile, for educational media, leaflets can only be understood by reading the writing and looking at the pictures in the book. The writing in the leaflet is more dominant than the pictures. Information that is directly written and explained in words can create a feeling of boredom in children which results in a lack of interest in reading this media. This is also supported by [17] statement which states that elementary schoolage children tend to prefer visual media that contain lots of pictures and minimal writing.

Research indicates that interest significantly influences educational achievement among school-age children[16]. Illustrated comic media serve as particularly effective educational tools because they: (1) attract children to engage repeatedly with the material, enhancing information retention; (2) present simple, practical visual messages that appeal strongly to young learners [3]; and (3) combine relatable imagery with text in a format that mirrors children's daily experiences[3]. The effectiveness of comics as learning media derives from several key characteristics[4]:

1. Simplified information presentation that facilitates comprehension
2. Concise plots that emphasize core messages
3. Strategic use of dialogue for information delivery
4. Visual-verbal integration that enhances message absorption
5. Expressive characters that foster emotional engagement

Furthermore, comics featuring anthropomorphic characters or familiar situations enable children to connect educational content with their lived experiences[17]. This multimodal format not only serves as an engaging learning medium but also functions as effective instructional material.

Research on the use of the comic media "Si Imut" was also carried out by [2]. The research conducted by Muis et al aimed to see the influence of comics on changes in students' knowledge regarding dental and oral health at SDN 12 Pulau Kapposang, Makassar. This research was carried out using a pre-test-post-test approach and used control, namely counselling. The statistical test, namely the unpaired T-test, obtained results in the form of a p-value = 0.000. It can be concluded that comics have a better influence in increasing respondents' knowledge about dental and oral health.[16]

Conducted similar research entitled "The Influence of Comic Media on Elementary School Children's Toothbrushing Knowledge." The results of the research show that health promotion using comic media influences elementary school children's toothbrushing knowledge. The Mann-Whitney test found that the experimental group had a mean rating of 36.40, compared to 24.60 in the control group.

In previous research, control media were used in the form of direct counselling and short stories, whereas in this research, leaflets were used as control media. Researchers chose leaflets as control media because this media is the promotional media most often used for education today. Leaflet media is also often used by people with various levels of age, education and various backgrounds. However, specifically for school-age children, it turns out that the use of comic media as an educational medium provides more significant results in increasing knowledge of dental and oral health compared to leaflet media. So this research can be one of the government's

considerations for creating standardized health education comics so that they can become effective promotional media for school-aged children. So that behavior change campaigns can be implemented effectively in children from an early age. It is also hoped that this can increase interest in reading in school-aged children by providing reading material that is interesting and contains knowledge about health

CONCLUSION

This section presents the conclusions derived from research examining the impact of behavior change campaigns using comic media on dental and oral health knowledge among students at SDN 29 Songka, Palopo City. The study found that the comic media intervention group experienced a significant increase in mean knowledge scores, rising by 27.4 points from 54.1 in the pre-test to 81.5 in the post-test. In contrast, the leaflet media group showed a smaller improvement of 14.3 points, with scores increasing from 48.9 in the pre-test to 63.4 in the post-test.

Health promotion using comic media had a more significant influence compared to using leaflet media with the difference in the post-test mean score between the comic group and the leaflet group being 18.3 with a value of $p=0.000$ ($p<0.05$).

The following are suggestions that researchers can direct to related parties:

1. SDN 29 Songka School, Palopo City
It is hoped that students will be able to implement the knowledge they have gained from this dental and oral health education in their daily lives to improve their dental and oral health, for their parents to be able to pay special attention to their children's dental and oral health and accompany their children in the process of preventing dental and oral diseases. child's mouth.
2. Palopo City Government
There is a need to increase health promotion efforts in the community,

including standardized and attractive health promotion media to obtain better results in increasing knowledge and health awareness.

3. Next researcher

It is hoped that in the future further research will be carried out in the field of comic media related to the dental and oral health of elementary school children, in consultation with media experts. As well as standard comic media research that discusses topics such as tooth brushing skills, tooth decay, tartar and the influence of food on dental health.

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