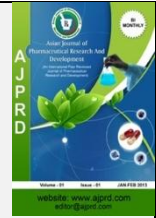


Available online on 15.4.2022 at <http://ajprd.com>

Asian Journal of Pharmaceutical Research and Development

Open Access to Pharmaceutical and Medical Research

© 2013-21, publisher and licensee AJPRD, This is an Open Access article which permits unrestricted non-commercial use, provided the original work is properly cited

Open  Access

Research Article

The Effect of Pop Up Book Media on Increasing Dental Health Knowledge in Elementary School Children

Pudentiana Rr Re¹, Siti Nurbayani T², Tugiman Atmasumarta³, Tri Riana Lestari⁴, Tedi Purnama^{5*}

^{1,2,5}Department of Dental Health, Poltekkes Kemenkes Jakarta I, Indonesia

³Department of Nutrition, Poltekkes Kemenkes Jakarta II, Indonesia

⁴Department of Orthotics Prosthetics, Poltekkes Kemenkes Jakarta I, Indonesia

ABSTRACT

Background: Children are a very large group of people and have a high prevalence of dental caries. This is related to the correct tooth brushing behavior data which is 2.8% every day. Dental health promotion is an effort to increase children's knowledge whose success cannot be separated from the method of education and the role of the media. Pop-up book is one of the three-dimensional visual media that can be an alternative as a learning medium. **Objective:** This study aims to analyze the effect of pop up book media on increasing dental health knowledge of elementary school children. **Methods:** Pre-experimental research with pretest-posttest control group design. The sampling technique was purposive sampling as many as 64 children, consisting of 32 children in the intervention group and 32 children in the control group. The study was conducted at SDN 03 Cilandak Timur, South Jakarta from September to October 2021. The variable influence on the intervention group was pop up book media and the control group was flipchart media while the affected variable was dental health knowledge. The research instrument used a questionnaire about dental health. Data analysis used the SPSS program with the Paired Sample Test to compare the knowledge scores before and after the intervention and the independent t-test to compare the difference in knowledge scores between the intervention group and the control group. **Results:** The results of the Paired Sample Test on knowledge in the intervention group obtained $p = 0.000$ and in the control group was $p = 0.182$. The results of the independent t-test were obtained $p = 0.000$. **Conclusion:** Pop up book media is effective in increasing the dental health knowledge of elementary school children.

Keywords: Pop Up Book Media, Dental Health, Elementary School.

ARTICLE INFO: Received; 26 Jan.2022 Review Complete; 10 March 2022 Accepted; 26 March 2022 Available online; 15 April. 2022



Cite this article as:

Pudentiana, Tauchid NS, Atmasumarta T, Lestari RT, Purnama T, The Effect of Pop Up Book Media on Increasing Dental Health Knowledge in Elementary School Children, Asian Journal of Pharmaceutical Research and Development. 2022; 10(2):00-00.

DOI: <http://dx.doi.org/10.22270/ajprd.v10i2.1112>

*Address for Correspondence:

Tedi Purnama, Department of Dental Health, Poltekkes Kemenkes, Jakarta I, Indonesia.

INTRODUCTION

Children are a very large group of people and have a fairly large prevalence of dental caries. A survey conducted by the Ministry of Health of the Republic of Indonesia in basic health research in 2013 showed that the prevalence of the Indonesian population suffering from dental and oral problems was 25.9%.^{1,2}

The main factor that can cause dental caries is the presence of bacteria that can cause dental caries, namely streptococcus and lactobacilli types, the foods we often

consume are sticky and sticking foods such as candy and chocolate which greatly facilitate the occurrence of dental caries, as well as the shape of the teeth that are bad, irregular and thick saliva. In addition to the several factors above, other factors also contribute to dental caries, namely the level of dental and oral hygiene, food frequency, gender, age and dental health behavior.³⁻⁵

Dental health education is an educational concept and a healthy concept, so dental health education is a learning

process aimed at individuals and community groups to achieve the established dental health degree. Children aged 6 to 12 years at this stage they often show the best in their lives, so dental health for them is one thing that can motivate them to learn. Therefore, children can be taught how to maintain dental and oral health in more detail so that it will create a sense of responsibility for their own hygiene.⁶⁻⁸

Efforts to maintain dental health and foster dental health, especially for school-age children, need special attention because at this age children are undergoing a process of growth and development, the condition of children's teeth will affect the development of dental health in adulthood.^{9,10}

Pop-up book media is a book-shaped media that has three-dimensional elements. The material in the book is presented in the form of interesting pictures, in which there are parts that when opened can move or change shape. The use of a pop-up book can be used as a recommendation to provide a variety of learning and is very relevant to this research activity.^{11,12}

Pop-up books can provide a more interesting visualization of stories, starting from images that appear to have a three-dimensional and kinetic appearance, images that can move when the page is opened or the part is shifted so that it can move so that it can form like the original objectsound. Things like this make the story more fun and interesting to enjoy. Another thing that makes Pop-up books interesting and different from ordinary illustrated story books is that readers feel like they are part of this amazing thing because they have a hand when opening the pages of the book.¹³⁻¹⁶

Dental and oral health education for children from an early age is very necessary.¹⁷ The purpose of health education and using pop-up books is expected to motivate children in the process of growth and development to pay more attention to the interests of general health and teeth, to make changes to individual behavior in particular to their teeth-brushing skills that can train patience, thoroughness and regularly pay attention to the times. properly clean his teeth so that he plays an active role in realizing free caries at the age of 12.

METHODS AND MATERIALS

This research is apre-experimentalwith pretest and posttest with control group design. The study was conducted at SDN 03 Cilandak Timur, South Jakarta in September-October 2021. The sampling technique was purposive sampling as many as 64 children, consisting of 32 children in the intervention group and 32 children in the control group. The influence variable in the intervention group is pop-up book media and the control group is flipchart media, while the affected variable is dental health knowledge. The data collection instrument used a questionnaire.

Data analysis was carried out using the SPSS statistical program, paired sample test to determine the difference before and after the intervention and t-test to test the difference between the intervention and control groups.

RESULTS

Table 1: Frequency distribution of respondent characteristics

Variable	Intervention groups		Control groups	
	n	%	n	%
Age				
11 years	17	53.1	7	21.9
12 years	15	46.9	25	78.1
Gender				
Male	3	9.4	15	46.9
Female	29	90.6	17	53.1

Table 1 shows that the distribution of respondents by age in the intervention group is at most 11 years old, while the control group is 12 years old. The distribution of respondents by gender shows that the intervention and control groups have the same proportion of female.

Table 2: The average value of dental health knowledge in the intervention and control groups

Knowledge	Intervention groups		Control groups	
	Pre-test	Post-test	Pre-test	Post-test
Mean	54.59	77.50	40.19	40.63
SD	15.92	3.408	6.493	6.058
Min-Max	25 - 95	70 - 85	30 - 55	30 - 55

Table 2 shows the mean value of dental health knowledge has increased, in the intervention group it increased from 54.59 to 77.50 and the control group increased from 40.19 to 40.63.

Table 3: Data normality test

Groups	Knowledge	
	Pre-test	Post-test
Intervention	0.896	0.001
Control	0.269	0.265

* Shapiro-Wilk

Table 3 shows that the results of the normality test for the knowledge and skills of the intervention and control groups were normally distributed because the p-value was > 0.05.

Table 4: Test the effectiveness of dental health knowledge before and after intervention

Groups	Knowledge		
		Mean± SD	P-value
Intervention	Pre-test	54.59±15.92	0.000
	Post-test	77.50±3.408	
Control	Pre-test	40.19±6.493	0.182
	Post-test	40.63±6.058	

Table 4 shows the results of the effectiveness test of the data before and after being given dental health education with pop-up book media showed that the p-value of the intervention group was 0.000 (p <0.05) and the p-value of the control group was 0.182, meaning that the pop-up book media was effective in increasing dental health knowledge.

Table 5: Different test of dental health knowledge in the intervention and control groups

Groups	Knowledge		
		Mean+ SD	P-value
Intervention	Pre-test	77.50±3.408	0.000
	Post-test		
Control	Pre-test	40.63±6.058	
	Post-test		

Table 5 shows the results of the knowledge difference test showed that the p-value between the intervention group and the control group was 0.000 ($p < 0.05$), meaning that pop-up media was more effective in increasing dental health knowledge than the control group.

DISCUSSION

Respondents in this study were 64 people who were divided into two groups, namely the pop-up book media group and the flipchart media group. The results showed that there was an increase in the value of dental health knowledge in the intervention group and control group, in the intervention group it increased from 54.59 to 77.50 and the control group increased from 40.19 to 40.63.

Knowledge is the result of knowing, and this occurs after people have sensed a certain object. Sensing occurs through the five human senses, namely sight, hearing, smell, taste and touch. Most of human knowledge is obtained through the eyes and ears. Knowledge or cognitive is a very important domain in shaping one's attitudes and actions. One of the strategies to obtain behavior change according to WHO cited by Notoatmodjo is to provide information to increase knowledge criteria so as to raise awareness that in the end the person will behave according to his knowledge.¹⁸ One of the efforts to provide this information is to use pop up book media.¹⁶

The results of the test before and after the intervention with the Paired Sample Test test obtained the results of the effectiveness test of the data before and after being given dental health education with pop-up book media showed that the p-value of the intervention group was 0.000 ($p < 0.05$) and the p-value of the control group was 0.182, meaning that the pop-up book media was effective in increasing dental health knowledge, while based on the independent t-test test showed that the results of the knowledge difference test showed that the p-value between the intervention group and the control group was 0.000 ($p < 0.05$), meaning that pop-up media was more effective in increasing dental health knowledge than the control group.

This is in accordance with the research of Akbar et al that the information provided in the form of Pop Up book media was able to increase knowledge criteria.¹⁹ Attractive pop ups have the ability not only to influence the respondent's knowledge criterion score, but can also increase the knowledge criteria with different materials within a period of 2 weeks and the respondent's knowledge criteria immediately after studying the pop up book media turns out to be easier to understand rather than leaflet media which are usually only full of writings. Judging from the changes in respondents' knowledge of the material for brushing teeth per question item, it is known that there are several knowledge criteria, the majority of which are known, namely increasing after being given the Pop Up book media.^{20,21}

Media can be used to increase knowledge so that it is expected that there will be changes in respondent behavior. Media is a tool in the educational process, has the benefit of stimulating the interest of students or in this activity is the respondent, overcoming the limitations of time, place, language and senses, overcoming the passive attitude of the audience and can provide stimulation, experience and create

the same perception, encourage the target's desire to know, explore, and finally provide a better understanding and stimulate the target to transmit messages to others.^{18,22}

Pop-up books are one of the three-dimensional visual media that can be an alternative learning tool. Pop-up books are defined as animated books designed in such a way that they form a three-dimensional structure when the book is opened. Visualization of pop-up books that Unique and interesting books can stimulate children to learn, make it easier for them to remember material and be able to develop children's abilities. Pop-up books can also serve to bridge the relationship between real situations and the symbols that represent them. The media images presented in pop-up books are concrete so that it can overcome the limitations of one's observation and clarify a problem.^{16,20,21}

CONCLUSIONS

Based on the research results, it can be concluded that there is Pop up book media is effective in increasing the dental health knowledge of elementary school children.

ACKNOWLEDGMENTS

The author would like to thank the Poltekkes Kemenkes Jakarta I which provides funding lecturer research.

CONFLICT OF INTEREST

The authors declare that they have no conflict interests.

ETHICAL CLEARANCE

The study was conducted after obtaining approval from Ethical Exemption Poltekkes Kemenkes Jakarta I No.180/KEPK/VIII/2021.

REFERENCES

- Maryam H, Isnanto I, Mahirawatie IC. Determinants of nutritional status in the dental health status of school age children: Systematic Literature Review. *JDHT J Dent Hyg Therapy*. 2021;2(2):62–71.
- Kemenkes RI. Riset kesehatan dasar tahun 2013. Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI. 2013;
- Veiga NJ, Aires D, Douglas F, Pereira M, Vaz A, Rama L, et al. Dental caries: A review. *J Dent Oral Heal*. 2016;2(5):1–3.
- A'yun Q. How is the Oral Hygiene of Elementary School Students? - Saliva pH, Saliva Volume and Saliva Viscosity. *Asian J Pharm Res Dev*. 2021;9(6):24–7.
- Tarigan R. Karies gigi. Jakarta EGC. 2013.
- Pudentiana Rr RE, Subandini SL. Pendidikan kesehatan gigi. Jakarta EGC. 2019.
- Alrahlah A. How effective the problem-based learning (PBL) in dental education. A critical review. *Saudi Dent J*. 2016;28(4):155–161.
- Margareta S. 101 tips & terapi alami agar gigi putih & sehat. 2012;
- Santoso B, Susanto E, Widyawati MN, Rahman WA, Rajiani I. Revitalizing School Dental Health Effort through " Model 222" as a Strategy to Achieve Caries-Free Indonesia 2030. *Syst Rev Pharm*. 2020;11(2).
- Purnama T, Fadjeri I, Widiyastuti R. Model Mentoring Teachers and Parents as an Efforts for Brushing Teeth Behavior in Preschool Children. *Indian J Forensic Med Toxicology*. 2020;14(4).
- Noviyanti DAPM, Margunayasa IG. Animal and Human Digestive System Material of the Fifth Grade Elementary School in the form of Pop-Up Book Media. *J Educ Technol*. 2020;4(2).
- Rachmadani AP, Fauziah E, Rizal MF, Indarti IS. The effects of the pop-up book " Aku dan Gigiku" on salivary alpha amylase levels in hearing impaired children. *J Int Dent Med Res*. 2018;11(1).
- Bluemel N, Taylor RLH. Pop-up Books: A Guide for Teachers and Librarians. ABC-CLIO; 2012.

14. Sari NE, Suryana D. Thematic Pop-Up Book as a Learning Media for Early Childhood Language Development. *J Pendidik Usia Dini*. 2019;13(1):43–57.
15. Ahmadi F, Fakhruddin T, Khasanah K. The Development of Pop-Up Book Media to Improve 4th Grade Student's Learning Outcomes of Civic Education. *Asia Pacific J Contemp Educ Commun Technol*. 2018;4(1):43–50.
16. Rizkika N, Christiono S. Efektivitas buku pop-up terhadap pemahaman kesehatan gigi anak berkebutuhan khusus. *Indones J Paediatr Dent*. 2018;1(1):22–25.
17. Purnama T, Ngatemi N, Sofian R, Kasihani NN, RE PR, Nurbayani S. Model 5 Days Gosgi sebagai upaya pembentukan kemandirian menggosok gigi anak usia dini di sekolah. *Qual J Kesehat*. 2020;14(1):19–24.
18. Notoatmodjo. *Promosi Kesehatan dan Perilaku Kesehatan*, Edisi Revisi. Jakarta: Rineka Cipta; 2012.
19. Akbar A. Pengaruh media pop-up terhadap peningkatan pengetahuan dan kesehatan gigi dan mulut siswa-siswi di Sekolah Dasar No. 19 Limboro, Majene. *J ABDI (Sosial, Budaya dan Sains)*. 2020;2(1).
20. Anggraini W, Nurwahidah S, Asyhari A, Reftyawati D, Haka NB. Development of Pop-Up Book Integrated with Quranic Verses Learning Media on Temperature and Changes in Matter. In: *Journal of Physics: Conference Series*. IOP Publishing; 2019. p. 12084.
21. Sari DV, Kusmariyatni N. The Validity of the Pop-Up Book Media on Puberty Topics for Sixth Grade Elementary School. *Int J Elem Educ*. 2020;4(2):179–86.
22. Arsyad A. *Media pembelajaran*. Jakarta: PT Raja grafindo persada; 2011.