

Dental and Oral Health Education Media: Effectiveness in Improving Health Students' Knowledge and Attitudes

Sitti Nur Djannah^{1*}, Heni Trisnowati², Intan Wahyuni Tukiyo³, and Solikhah Solikhah⁴,
Monthida Sangruangake⁵

^{1,2,3,4} Faculty of Public Health, Universitas Ahmad Dahlan, Yogyakarta, Indonesia

⁵ Faculty of Nursing, Udon Thani Rajabhat University, Udon Thani, Thailand

*corresponding author: sitti.nurdjannah@ikm.uad.ac.id

ARTICLE INFO

Article history

Received January 9, 2025

Revised January 30, 2025

Accepted February 17, 2025

Keywords

Attitude

College Student

Dental and Oral Health

Educational Video

Knowledge

ABSTRACT

Background: Adolescents' dental and oral health problems are significant and require attention, particularly given the relatively high incidence rates. These problems frequently arise due to the lack of proper education in maintaining dental and oral hygiene and health. Video media and pocketbooks, with attractive visual displays and thin but informative pages, may be a solution to providing health education to students. This study aims to determine the effectiveness of video media and pocketbooks as educational and health promotion media for improving students' dental and oral health among students. **Method:** Experimental study design with a pre-test and post-test model was used in this study. A sample of 104 students was selected through purposive sampling. Then, the data were analyzed using the Wilcoxon Signed-Rank Test to compare the effectiveness of students' knowledge and attitudes before and after receiving dental and oral health education. **Results:** The results showed an increased in knowledge (p-value: 0.000) and attitudes (p-value: 0.001) before and after being educated using pocketbook media about dental and oral health. **Conclusion:** Providing pocketbooks and videos as health promotion educational media is effective in improving students' knowledge and attitudes toward maintaining dental and oral health. It is necessary to develop the content to be more varied and informative and to use other promotional media to strengthen students' knowledge and attitudes.



This is an open access article under the [CC-BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.

Introduction

Oral health is the condition of the mouth, teeth, and orofacial structures that enable individuals to perform essential functions such as eating, breathing, and speaking, and includes psychosocial dimensions such as self-confidence, well-being, and the ability to socialize and work without pain, discomfort, and embarrassment. Most oral diseases and conditions are caused by modifiable risk factors for non-communicable diseases, one of which is an unhealthy diet high in free sugars, all of which are increasing globally. Furthermore, according to the

WHO, there is a causal relationship between high sugar consumption and diabetes, obesity, and dental caries [1].

Based on WHO report that as many as 3.5 billion people suffer from dental and oral diseases, namely 3 out of 4 people suffer from this problem, most of whom are in developing and middle-income countries. Then, this problem causes several negative consequences including untreated primary and permanent tooth caries, severe periodontal disease, edentulism (total tooth loss) and lip and oral cavity cancer [2]. Previous studies have shown that there are four factors that directly influence and play an important role in dental and oral health: environment (physical and socio-cultural), behavior, health services, and genetics. Among the four factors, knowledge and behavior have a direct influence and play an important role in dental and oral health. Good knowledge supported by a positive attitude will influence actions to maintain dental and oral health. The low knowledge and attitude of students in maintaining dental and oral health has an impact on the negative behavior of students in maintaining dental and oral hygiene and health. Therefore, there is a need for health promotion development media to improve students' knowledge and attitude in maintaining dental and oral health [3,4].

Dental and oral hygiene will align with dental and oral health. This is linked to knowledge and behavior in maintaining dental and oral health. Good knowledge is proven by the ability to obtain, remember, and understand information from what is seen and heard and how to maintain good dental hygiene. Education is closely related to knowledge, especially health knowledge [5,6]. If adolescents can maintain good dental and oral hygiene, their dental and oral health will be good [7]. Actions in maintaining dental and oral health are also related to the emergence of various problems and subjective complaints of teeth and mouth [6].

Changes in attitudes and knowledge must be supported by health promotion media that are relevant to the health problems faced; one of the innovations in the development of health promotion media is pocketbooks. Good knowledge about dental and oral health must at least be known by all groups, especially students. However, in previous studies, health students have good knowledge and a better understanding of how to maintain dental and oral hygiene and health. Health students are preparing to become professional health workers, so it is expected that the knowledge and actions to maintain dental and oral health would be better than non-health students. This is related to the needs of health students to educate patients and communities when they start working [5,6,8].

The use of pocketbook media has proven to be effective in increasing a person's knowledge and understanding. Pocketbooks designed with easy-to-understand content, attractive colors and designs, as well as visual aids, have proven to be effective in improving adolescent learning outcomes and health promotion. Research shows that pocketbooks could be used as an effective health promotion development tool to improve knowledge and attitudes in various settings [9,10,19,20,11–18]. Thus, this study aims to determine the effectiveness of using pocketbooks as a medium for education and health promotion towards improving students' dental and oral health. The findings from this study suggest that pocketbooks are not only effective educational tools but also play a significant role in promoting health awareness among university students. Their ability to enhance motivation and learning outcomes highlights their potential as a valuable resource in educational settings.

Materials and Method

This study used an experimental design with a pre-test and post-test model. This study was conducted at a campus of the Faculty of Public Health in Yogyakarta, with a population involving three classes of first-semester students in the Public Health study program. The research sample was taken using a purposive sampling technique totaling 104 respondents, with the inclusion criteria being students aged ≥ 16 years, being first-semester students and present on the day the study was conducted. While the exclusion criteria were respondents who did not fill in their personal data and incomplete questionnaires and were present on the day the study was conducted.

Education is provided through educational videos on dental and oral health, revolving around the importance of maintaining dental and oral health, the impacts and ways to prevent dental and oral problems. The video lasts around 7 minutes, then continues with the provision of a pocketbook that also revolves around dental and oral health, the impacts and ways to prevent dental and oral health problems. In this study, the instrument used to determine the effectiveness of the education was an electronic questionnaire on knowledge and attitudes about dental and oral health in adolescents. This questionnaire consists of three parts, namely respondent characteristics, knowledge with a correct answer = 1, and wrong = 0. Then for attitude questions, it was coded as strongly agree = 5, agree = 4, doubt = 3, disagree = 2, and strongly disagree = 1. Data analysis used quantitatively using the Wilcoxon Signed-Rank test because it was proven that the data was not normally distributed, to compare the effectiveness of students' knowledge and attitudes before and after being given education about dental and oral health, with a significance level of 0.05 (CI95%). This study has been declared to have passed the ethical feasibility test from the Ahmad Dahlan University Ethics Committee with Number: 012411339.

Results

Based on product development research, the results were obtained in the form of a pocketbook and educational video on dental and oral health for adolescents. The materials and media in this study were validated by experts who were competent in their fields. Validation data by material experts were obtained by providing pocketbook and video media along with assessment instrument grids. Then, the material experts provided suggestions/input on the content of the material on dental and oral health for adolescents by completing the provided questionnaire. After the assessment by the material experts, the researchers made revisions according to the experts' input, such as focusing on diseases/problems experienced by adolescents, bad habits during growth, explaining the material in a relaxed and not too clinical language and increasing illustrations compared to long sentences. After revising the material on the pocketbook and video media based on input from material experts, it can be concluded that the material experts stated that the pocketbook and educational video media on dental and oral health were suitable for use with revisions as suggested prior to the field testing.

The pocketbook media was validated by media experts by assessing the suitability of the material with the target readers, the feasibility of the design, the design of the content, the color images, the text and the layout in the pocketbook and the usefulness of the pocketbook as a dental health education media. The validation data from the material expert was obtained by providing the pocketbook media along with the instrument grid and assessment instrument. The media expert then provided an assessment along with suggestions/input on the appearance and material of the dental health education pocketbook by filling out the validation sheet that had been provided. After the media expert gave an assessment, the researcher made revisions according to the input/suggestions from the media expert. The revisions from the media expert regarding the suitability and feasibility of the pocketbook were to replace sentences containing data with visual forms such as diagrams, change sentences to make them easier to understand, the design can be made more attractive by adding images that support the sentences in the pocketbook, then in terms of layout it is necessary to consider whether the pocketbook will be printed or in digital form and give page numbering. The validation results from the media expert stated that the pocketbook media as a dental and oral health education media for adolescents/students is suitable for use and has met the media feasibility criteria, so that it can be used in the field.

The same thing is done for video media validation, validation is done by media experts to see the relevance of the content, presentation and editing techniques, and the effectiveness of learning and delivering messages to the audience. Validation is performed by media experts by providing video media along with instrument grids and assessment instruments. The media experts then provide an assessment along with suggestions/input on the appearance and material of the dental health education pocketbook by filling out the validation sheet that has

been provided. Then, after the media expert's assessment, the video is revised according to the experts' suggestions/input, namely selecting the initial hook/element of the video to make it more interesting, checking subtitles and video continuity at certain minutes so that it can focus on the essential parts and be easy for the audience to remember, and adding several statements that can provoke audience interaction to be more active when the video is broadcast. After the revision, according to expert input, it was concluded that the video media was suitable for use in the field. The results of the research on respondent characteristics are described in Table 1 below.

Table 1. Students' Characteristics (n=104)

Variables	Total	
	n	%
Gender		
Man	23	22.1
Woman	81	77.9
Class		
A	15	14.4
B	40	38.5
C	49	47.1
Age		
17 years	8	7.7
18 years	59	56.7
19 years old	24	23.1
20 years	12	11.5
21 years	1	1.0
Mother's job		
State Apparatus	30	28.8
Self-employed	15	14.4
Farmer	4	3.8
Private sector employee	2	1.9
Housewife	51	49.0
Etc	2	1.9
Father's occupation		
State Apparatus	32	30.8
Self-employed	36	34.6
Farmer	24	23.1
Private sector employee	9	8.7
Etc	3	2.9
Mother's education		
Elementary School	14	13.5
Junior High School	10	9.6
High School	36	34.6
Diploma	12	11.5
College	31	29.8
No School	1	1.0
Father's education		
Elementary School	10	9.6
Junior High School	8	7.7
High School	43	41.3
Diploma	10	9.6
College	32	30.8
No School	1	1.0
Order of Children		
First child	51	49
Second child	33	31.7
Third child	17	16.3
Fifth child	1	1.0
Sixth child	1	1.0
Fourteenth child	1	1.0
Residence Status		
Boarding house/rented house	89	85.6
Living with parents	15	14.4

Table 1. shows that of the 104 respondents of the study, 77.9% were female students, with more than half of them being in the 18-year-old age group, namely 56.7%. In addition, as many

as 47.1% of respondents came from class C. And almost half, around 49% were first children, who lived in boarding houses/rental houses, as many as 85.6% were students. Based on the results of this study, it is also known that the mother's job is mostly a housewife, around 49%, while the father's job is 34.6% as an entrepreneur. Regarding education, it is more dominated by parents whose last education is high school/vocational school, namely mothers at 34.6% and fathers at 41.3%.

The results of the test of the effectiveness of education in increasing adolescent knowledge and attitudes about dental and oral health can be seen in Table 2 below:

Table 2. Effectiveness of Educational Media on Increasing Knowledge and Attitudes Health Student

	n	Knowledge	P-value	Attitude	P-value
		Mean \pm SD		Mean \pm SD	
Pretest	104	12.45 \pm 1.64	0.000	54.45 \pm 4.48	0.001
Posttest	104	14.13 \pm 0.80		56.21 \pm 7.40	

Based on Table 2. It can be explained in the pretest session showed the average knowledge of students was 12.45 then after education with video media and pocketbooks, students' knowledge increased quite high at the time of the posttest to 54.45, with a significance value of 0.000. This shows that pocketbook media is effective in increasing students' knowledge. Similarly, with attitudes, and in the pretest session the average attitude of students was 14.13, after education and posttest, an increase in the average attitude of students was 56.21. This increase is supported by the significance value of students' attitudes about dental and oral health, which is 0.001. It can be concluded that students' knowledge and attitudes about dental and oral health increased after being given education using pocketbook media.

Discussion

The results of the study showed that educational media for health promotion using video media and pocketbooks were effective in increasing the knowledge and attitudes of health study program students regarding dental and oral health. Broader knowledge about dental and oral health tends to encourage better behavior in maintaining dental and oral health, thus creating more optimal health conditions. A positive attitude towards dental and oral health, which is influenced by the knowledge possessed, will form better behavior in maintaining such health [21].

Knowledge is the result of knowing, and this happens after a person senses a particular object. Sensing occurs through the five human senses, namely the senses of sight, hearing, smell, taste, and touch. However, most human knowledge is obtained through the eyes and ears. Knowledge can be obtained by a person naturally or through intervention either directly or indirectly [22]. Previous research conducted by Yase said that the use of pocketbook media makes it easier for individuals to use their sense of sight to read and see the information available. The appearance of pocketbooks that are packed with few pages but contain a lot of information makes it easy for individuals to carry and read them anytime. In addition, pocketbooks also contain clear, firm and easy-to-understand information, by utilizing writing and images so that the use of pocketbooks can increase knowledge [14].

In this study, the use of video media and pocketbooks was also effective in improving students' attitudes towards dental and oral health. Individual motivation and tendencies are internal factors that shape attitudes. The attitudes formed cause a person's level of awareness and initiative towards dental and oral health to vary. Low awareness and initiative in maintaining dental and oral health will affect the health condition. In addition, although students' attitudes towards dental and oral health have increased, many still do not maintain their dental and oral health properly, such as not having regular dental care. One of the causes is the high cost of dental care because many students do not have an income and lack of time for dental and oral care [21,23].

The knowledge that a person has will influence their decision in taking health actions. Knowledge and attitude play a big role in determining individual behavior in maintaining their health. Individuals with low levels of knowledge tend to have poor health behavior. Thus, knowledge and attitude have a significant relationship to adolescent behavior in maintaining dental and oral health [3]. In other words, attitudes will also increase along with the increasing level of individual education [24]. The results of previous studies also describe dental health knowledge in nursing students, there are 51% of students who have sufficient knowledge, and none of them have insufficient knowledge. New students are able to capture, remember, and understand the information they see and hear about tooth decay and know how to maintain good dental hygiene. Education is closely related to knowledge, especially knowledge about health [5].

The importance of pocketbooks plays a significant role in shaping attitudes towards dental health. Ulliana's research shows that motivational interviews combined with educational materials, including pocketbooks, can significantly improve adolescents' oral hygiene behavior by increasing their knowledge and attitudes [25]. Later, Zeng et al.'s study found a positive correlation between adolescents' attitudes toward oral health and their actual dental health status, suggesting that educational interventions that increase knowledge may result in better health outcomes [26]. The same results were obtained in previous studies, namely that socialization was proven to be effective in conveying information and increasing participant understanding, with 87% of participants experiencing an increase in understanding of dental and oral health, and 84% of participants experiencing an increase in understanding of how to properly maintain dental and oral health [27].

The development of video media and pocketbooks on dental and oral health can be used as significant health education tools to improve knowledge and attitudes towards oral hygiene, especially among students and adolescents. Daryanto said that providing education using video as a learning medium is very beneficial. This is because video as a non-printed teaching material is flexible in display size, rich in information, straightforward in direct delivery, and adds a new dimension to learning [28]. Providing health education using pocketbooks and videos is considered effective in improving individual knowledge and attitudes, the same thing was also mentioned in previous studies that pocketbooks and videos are effective as health education media to improve health levels and healthy living behaviors to prevent health problems, one of which is teeth and mouth. Pocketbooks are interesting and practical learning tools, which can improve cognitive abilities and information retention of students/adolescents [29–31].

Media can be used to increase knowledge, thus producing the expected changes in respondent behavior. Media functions as a tool in the educational process, stimulating student or respondent interest, overcoming limitations of time, place, language, and senses, and counteracting the passive attitude of the audience. Media provides stimulation and experience, creates a unified perception, encourages the target's desire to learn and explore, and ultimately increases understanding, encourages the target to convey messages to others. Because of its attractive visual and playful nature through colorful illustrations and interactive elements, it has been proven to stimulate interest and improve the learning experience of respondents [32–34].

The interactive nature of video media and pocketbooks, which often include colorful illustrations and interesting content, make them very attractive to teenagers. This is supported by Putri's research, which found that various media, including story stickers and pocketbooks, positively influenced children's knowledge of dental health [35]. Further research has strengthened the effectiveness of these materials, showing that visually stimulating educational tools can improve learning outcomes and retention of health-related information [36]. The use of pocketbooks and pop-up books significantly improved oral hygiene among school-aged children, as evidenced by positive changes in Oral Hygiene Index-Simplified (OHI-S) scores after the educational intervention [37]. In addition, the modified educational method using power point media, videos, demonstrations, group discussions and role plays on how to maintain dental and oral health carried out on adolescents can improve knowledge and attitudes towards

tooth decay and its prevention. Dental Health using video media is more effective in improving knowledge of dental and oral health and is very suitable as an information medium [38–40].

The study on the effectiveness of video media and pocketbooks as health promotion channels for improving dental and oral health knowledge among students presents several strengths and limitations. The strengths of the study include: 1) Significant improvement in knowledge and attitudes. The study demonstrated a marked increase in students' knowledge and attitudes towards dental health after exposure to video media and pocketbooks. 2) By using both video media and pocketbooks, the study catered to different learning styles, which can enhance engagement and retention of information among students. This multimodal approach is beneficial in educational settings, particularly for health promotion. 3) The use of a quasi-experimental design with pre-test and post-test measurements allows for a clearer assessment of the intervention's effectiveness. This design helps to establish a causal relationship between the educational intervention and the observed outcomes in knowledge and behavior. 4) The study highlights the need for collaboration between universities and organizations to effectively disseminate educational materials and suggests a framework for future partnerships that could increase outreach and impact. On the other hand, this study has several limitations, including: 1) the immediate post-intervention assessment may not reflect long-term retention of knowledge or sustained behavioral changes regarding dental health practices. Future studies should consider longer follow-up periods to evaluate the durability of knowledge gains. 2) Without a control group for comparison, it is challenging to attribute improvements solely to the interventions used. Including a control group would strengthen the study's findings by providing a baseline against which to measure change. 3) While the study suggests developing more varied content in pocketbooks, it does not address how differences in content quality or presentation may affect learning outcomes. Standardizing educational materials could help ensure consistency in effectiveness across different settings.

Conclusion

Based on the results of the study, it can be concluded that providing education through video media and pocketbooks as health promotion channels is effective in improving students' knowledge and attitudes toward maintaining dental and oral health. It is necessary to develop the content of the pocketbooks to be more varied and informative and to use other promotional media to further strengthen students' knowledge and attitudes. Additionally, collaboration between universities and organizations is needed to distribute video media and pocketbooks and to create educational activities for adolescents. It is hoped that students will become more aware of maintaining dental and oral health, thereby preventing dental diseases.

Declaration

Acknowledgments: All authors thanked to Universitas Ahmad Dahlan and all respondent for supporting this research.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. WHO. Oral Health 2023. <https://www.who.int/news-room/fact-sheets/detail/oral-health>.
2. WHO. *Global oral health status report - Towards universal health coverage for oral health by 2030*. 1st ed. Dental Abstracts. World Health Organization; 2022.
3. Rakhmawati NS, Budiono I, Rustiana ER. Determinants of Dental and Oral Health Maintenance Behavior in Adolescents. *Pros Semin Nas Pascasarj*. 2020; 3(1):414–419.
4. Syah A, Ruwanda RA, Basid A. Factors Related to Dental Caries Status in Elementary School Children of Min 1, Banjarmasin City. *J Kesehatan Indones*. 2019; 9(3):149.
5. Anang A, Robbihi HI. The Relationship between Knowledge and Dental and Oral Health Behavior. *Jl-KES (Journal of Health Sciences)*. 2021; 4(2):55–9. <http://dx.doi.org/10.33006/ji-kes.v4i2.176>.

6. Skripsa TH, Unique AA, Hermawati D. Thesis. The Relationship between Knowledge and Actions to Maintain Oral Health with Subjective Complaints of Oral Problems in Health and Non-Health Students. *e-GiGi*. 2021; 9(1):71–78. <https://doi.org/10.35790/eg.9.1.2021.32676>.
7. Roichana AS, Isnanto, Hidayati S. Knowledge of Youth of Jami'hidayatul Islamiyah Mosque about dental and oral hygiene (On Jalan Lidah Kulon RT 5 RW 1 Surabaya in 2022). *Indones J Heal Med*. 2022; 2(3):342–350. <http://ijohm.rcipublisher.org/index.php/ijohm/article/view/137>.
8. Hilmiy RI, Anang. Relationship between Knowledge of Dental and Oral Health and the Incidence of Dental Plaque. *Jurnal Kesehatan*. 2021; 10(2):59–66. <https://doi.org/10.37048/kesehatan.v11i1.375>.
9. Almas D, Wibowo H. Pocket Book to Improve Mother's Knowledge Regarding Primary Teeth Growth. *J Oral Heal Care*. 2022; 10(1):19–28. <http://dx.doi.org/10.29238>.
10. Sariningsih E. *Caring for Children's Teeth from an Early Age*. Jakarta: Elex Media Komputindo; 2014.
11. Lolita L, Ikhsanudin A, Ligawa YN, Makwa N, Larasati FA, Sukmaningtyas R, et al. Development of a Health Pocket Book as an Educational Media for COVID-19 Patients Undergoing Self-Isolation. *J Surya Masy*. 2023; 5(2):161–171. <https://doi.org/10.26714/jsm.5.2.2023.161-171>.
12. Yuniarly E, Haryani W, Eldarita. Booklet to Brush Tooth In The Promotion Of Dental Health Towards School Children's Knowledge. *J Dental Health*. 2023; 10(1):1–4. <https://doi.org/10.31983/jkg.v10i1.8895>.
13. Notoatmodjo S. *Public Health Science and Art*. Jakarta: PT. Rineka Cipta; 2012. p. 187.
14. Pratiwi A, Sulastri S, Hidayati S. The Relationship between the Level of Parental Knowledge about Tooth Growth Schedule and the Incidence of Tooth Persistence in Children Aged 6-10 Years at SDN Wojo 1 Bantul. *J Dental and Oral*. 2014; 1(1):12–18.
15. Hasanah M, Mahirawatie IC, Ulfah SF. Pregnant Women's Attitudes Towards Dental and Oral Health During Pregnancy Using Pocket Book Media. *Surabaya Dent Ther J*. 2023; 1(2):38–45. <https://doi.org/10.36568/sdtj.v1i2.8>.
16. Yase H, Ramayanti S, Nofika R. The Influence of Using Pocket Book Media and Lecture Methods As an Effort to Improve Mother's Knowledge in Preventing Dental Caries at the Integrated Health Post, Andalas Village, Padang City. *Andalas Dent J*. 2020; 8(2):53–62. <https://doi.org/10.25077/adj.v8i2.199>.
17. RE PR, Tauchid SN. Efforts to Instill PHBS Habits and Dental Hygiene in Students to Prevent Diseases at Cilandak Timur State Elementary School, South Jakarta. *J Pengabdian Mandiri*. 2024; 3(6):529–534.
18. Ruhmawati TT, Rachman Hakim A, Fitri Hilman A, Sudiyat R. Development of Health Promotion Media "Germas" Pocket Book for Health Cadres. *J Ris Kesehatan Poltekkes Depkes Bandung*. 2022; 14(1):43–49. <https://doi.org/10.34011/juriskesbdg.v14i1.2015>.
19. Sopianah Y, Rahayu C, Robbihi HI. Implementation of Pocket Books through Empowerment of Health Cadres at Posbindu. *BERNAS J Community Service*. 2023; 4(4):3528–3533. <https://doi.org/10.31949/jb.v4i4.6826>.
20. Kusmana A, Rahayu C. Comparison of Dental Health Education with Pocket Book Media and Lecture Methods on Knowledge of Dental and Oral Hygiene Maintenance in Preventing the Risk of Tooth Loss. *J Ilm Dental Nursing*. 2021; 2(2):395–401.
21. Kurniawati D, Cahyaningrum DA. Knowledge, Attitude and Practice Regarding Dental and Oral Health of Undergraduate Students of Muhammadiyah University of Surakarta. *JIKG (Journal of Dentistry)*. 2022; 5(2):1–8. <https://doi.org/10.23917/jikg.v5i2.20561>.
22. Notoatmodjo S. *Health Promotion and Health Behavior*. Jakarta, Indonesia: Rineka Cipta; 2012.
23. Okoroafor CC, Okobi OE, Owodeha-ashaka M, Okobi E, Oluseye B, Ekpang OB, et al. Dental Health Knowledge Attitude and Practice Among University of Calabar Students. *Cureus*. 2023; 15(6):e40055. <https://doi.org/10.7759/cureus.40055>.
24. Neeraja R, Kayalvizhi G, Sangeetha P. Oral health attitudes and behavior among a group of dental students in Bangalore, India. *Eur J Dent*. 2011; 5(2):163–167.
25. Ulliana U, Santoso B, Utami U, Nurwanti W, Nurrochman A. Brief Motivational Interviewing Counseling to Improve Oral Hygiene Behavior Among Adolescents. *Pakistan J Med Heal Sci*. 2021; 15(10):3103–3108. <https://doi.org/10.53350/pjmhs2115103103>.

26. Zeng L, Peng Y, Xu T, Wen J, Wan L, Ou X, et al. Dental caries and associated factors among adolescents aged 12 to 15 in Jiangxi Province, China. *J Public Health Dent.* 2020; 80(3):217–226. <https://doi.org/10.1111/jphd.12371>.
27. Satiti WS, Umaidiyah F, Rohmah H, Lilawati E, Khoiriyah A, Masluq AI, et al. Implementation of Pocket Books as a Media for Dental and Oral Health Education for Students of MI PPAI-Tanwirul-Qulub Malang. *Jumat Pendidik J Pengabdian Masyarakat.* 2023; 4(2):66–71.
28. Daryanto. *Learning Media.* Yogyakarta, Indonesia: Gava Media; 2010.
29. Chairani R. Pocket Book as a Media of Health Education to Improve Healthy Behavior in Street Teenagers. *Int J Curr Sci Res Rev.* 2022; 05(04):1318–1322. <https://doi.org/10.47191/ijcsrr/V5-i4-55>.
30. Hidayah N, Ridianingsih DS. A Development of E-learning-Based Pocket Books to Improve Students' Cognitive Ability. *Bioeducation.* 2022; 20(2):44. <http://dx.doi.org/10.19184/bioedu.v20i2.34071>.
31. Rusmiati R, Marlia L. Development of Dental Health Education Booklets and Videos in Reducing the Level of Dental and Oral Hygiene in Grade V Elementary School Children. *Bahana J Public Heal.* 2019; 3(1):35–42. <http://dx.doi.org/10.35910/jbkm.v3i1.192>.
32. Notoadmojo S. *Health Promotion and Health Behavior.* Jakarta: Rineka Cipta; 2012.
33. Akbar, Hasrul N, Day AK, Baharuddin VI, Lenggany FW, Asmawati. The Influence of Pop-up Media on Increasing Knowledge and Dental and Oral Health of Students at Elementary School No. 19 Limboro Majene. *J Abdi.* 2020; 2(1):104–108.
34. RE PR, T SN, Atmasumarta T, Lestari TR, Purnama T. The Effect of Pop Up Book Media on Increasing Dental Health Knowledge in Elementary School Children. *Asian J Pharm Res Dev.* 2022; 10(2):59–76. <https://doi.org/10.22270/ajprd.v10i2.1112>.
35. Putri AS, Widyastuti T, Putri RMH, Heriyanto Y. Dental story sticker media as an effort to increase dental and oral health knowledge of elementary school students. *J Cent Excell Heal Assist Technol.* 2023; 1(2):82–86. <http://dx.doi.org/10.36082/jchat.v1i2.1278>.
36. Fadjeri I, Purnama T, Suharja ES, Nurwanti W. Storgi Media as an effort to Improve Dental Health Behavior in Orphanage Children. *Asian J Dent Heal Sci.* 2023; 3(3):42–46. <https://doi.org/10.22270/ajdhs.v3i3.53>.
37. Nufus MH, Mariyam M, Sholekhah NK. The Effectiveness of Health Education through Pop-Up Books and Pocket Books on the Levels of Dental and Mouth Hygiene in School-Age Children. *Indonesian J Dent.* 2023; 3(2):31–41. <https://doi.org/10.26714/ijd.v3i2.12940>.
38. Az Zahra FS, Suryanti N, Putri FM. Increasing knowledge and attitudes about dental caries and prevention after educational intervention using a modified lecture method in adolescents. *J Dent.* 2024; 36(1):25–38. <https://doi.org/10.24198/pjd.vol36no1.48148>.
39. Kantohe ZR, Wowor VNS, Gunawan PN. Comparison of the effectiveness of dental health education using video and flip chart media on increasing children's dental and oral health knowledge. *e-GIGI.* 2016; 4(2):7–12. <https://doi.org/10.35790/eg.4.2.2016.13490>.
40. Eliawati R, Rizqi MA. Development of Animation Video Can Increase Knowledge about Caries Prevention in Students. *J Siliwangi Health.* 2021; 2(1):168–175. <https://doi.org/10.34011/juriskesbdg.v13i1.1839>.