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## **Increased knowledge through video-based dental health promotion: exploring the impact of new habits adaptation**

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**Patients' consent for publication:** written informed consent was obtained for anonymized patient information to be published in this article.

**Availability of data and materials:** all data generated or analyzed during this study are included in this published article.

## **Abstract**

Education is a key factor that imparts knowledge essential for keeping pace with advancements in science and technology. One viable approach for delivering dental health education, particularly in the context of tooth brushing, is through the utilization of videos. Videos make it easier to remember and comprehend lessons as they engage multiple senses. This study aimed to evaluate the knowledge enhancement achieved through the use of dental health promotion videos. The research employed a quasi-experimental design with a quantitative approach, specifically a pre-test and post-test control group design. The sample, comprising 60 students, was selected through purposive sampling, wherein samples were deliberately chosen based on specific considerations. The investigation aimed to evaluate the impact of dental health promotion by utilizing online methods with videos during the adaptation period to new habits.

The p-value of 0.001 ( $p < 0.05$ ) indicates a significant difference between the intervention and control groups. The average score in the intervention group was 42.74, while in the control group it was 18.25. The application of the learning model for managing dental health promotion through the online method using videos demonstrated notable benefits. Video media enables a closer observation of movements, saves time, and allows for the repetition of recordings. Videos fall under the category of audio-visual media, engaging both the sense of hearing and the sense of sight.

## **Introduction**

Coronavirus Disease 2019 (COVID-19) is a global health challenge that is persisting in causing both health emergencies and mental health crises worldwide.<sup>1</sup> COVID-19 is an infectious disease caused by a newly discovered type of coronavirus, the COV-2 SARS virus, which infects humans and leads to COVID-19, a potentially deadly condition.<sup>2,3</sup> According to all available investigations, the ecological origin of SARS-CoV-2 is in bat populations.<sup>4</sup> COVID-19 primarily spreads through respiratory droplets produced when an infected person coughs, sneezes, talks, or breathes.<sup>5</sup> The disease was first identified in December 2019 in Wuhan, the capital of China's Hubei Province.<sup>6</sup> The World Health Organization (WHO) declared it a pandemic, shocking the world and leading to the postponement of learning activities by most educational institutions.<sup>7,8</sup> The high number of cases and deaths caused by COVID-19, particularly in children, is the reason schools must remain closed for an extended period.<sup>9</sup> The government has urged people to work, study, and worship from home to reduce the number of individuals exposed to COVID-19.<sup>10</sup> The Indonesian government issued Circular Letter Number 4 of 2020 concerning the Implementation of Educational Policies in the Emergency

Period for the Spread of COVID-19. This circular prohibits offline learning at all levels of education and replaces it with online learning.<sup>11</sup> Learning activities are conducted online to prevent the spread of COVID-19.<sup>12,13</sup> Teachers must ensure that teaching and learning activities continue even though students are at home. The solution is for teachers to design learning media as an innovation by utilizing online platforms.<sup>14-16</sup>

Online learning utilizes the internet network with flexibility, accessibility, connectivity, and the capability to facilitate various learning interactions, thus enhancing the learning process.<sup>17,18</sup> Students can utilize communication devices, computers, software, and the internet as learning media, with teaching tailored to individual needs.<sup>19,20</sup> UNESCO said it supports implementing large-scale distance learning programs and platforms to reach students remotely. The United Nations Educational, Scientific and Cultural Organization (UNESCO) has expressed support for the implementation of large-scale distance learning programs and platforms to reach students remotely. Moreover, in an effort to mitigate the spread of the coronavirus, schools were suspended in more than 190 countries, impacting more than 1.6 billion learners.<sup>21</sup> The impact of the COVID-19 pandemic is now starting to affect the realm of education, leading central and regional governments to enact policies to close all educational institutions.<sup>22-24</sup>

Results of preliminary research conducted on the impact of COVID-19 on the implementation of online learning in elementary schools indicate that online learning can effectively break the chain of transmission of COVID-19.<sup>25</sup> The study results show that implementing online learning can be done well to break the chain of transmission of COVID-19.<sup>26</sup> In relation to the Student Activity Sheets for Distance Learning based on Scientific Literacy, specifically on the topic of COVID-19, it was noted that the worksheets needed evaluation before wider use could be considered.<sup>27</sup>

The primary objective of this study was to comprehend the increase in knowledge using video for dental health promotion. Video media allows for a closer observation of movements, saves time, and permits the repetition of recordings, thereby facilitating the absorption of knowledge. Videos are categorized as audio-visual media because they engage the senses of hearing and sight.

## **Materials and Methods**

The research design employed in this study was quasi-experimental, utilizing a quantitative approach, specifically the pre-test and post-test control group design. The sample, consisting of 60 students, was determined through purposive sampling, deliberately selecting samples based on specific considerations. The inclusion criteria for subjects in this study were elementary school children in grades 1, 3 or 5 and elementary school children whose parents owned and were able to operate a smartphone. The aim was to assess the effect of Dental Health Promotion using online methods with videos during the Adaptation Period to New Habits.<sup>28</sup>

In evaluating the intervention group, the level of dental health knowledge was assessed before and after treatment with the Learning Model for Management of Dental Health Promotion using the online method with videos during the New Habits Adaptation Period. For the control group, to fulfill ethical considerations, the intervention involved providing a learning model for health promotion management using alternative media.<sup>29</sup> The analysis aimed to assess the relationship between the independent and dependent variables by analyzing data from two variables. The significance of this relationship was determined using the Sample Kolmogorov-Smirnov Test for normality. The analysis before and after treatment was conducted using the Mann-Whitney test.

The research has obtained ethical approval from the Health Research Ethics Commission, a team of the Bandung Health Polytechnic, based on ethical certificate No. 03/KEPK/TE/VII/21.

Throughout the research, the researcher has adhered to ethical principles, including informed consent, respect for human rights, beneficence, and non-maleficence.

In this study, a 95% confidence level ( $Z\alpha=1.96$ ), a 90% power test ( $Z\beta=1.282$ ), and an effect size from a previous study of 0.56 were utilized.<sup>29</sup> Subsequently, the number of samples obtained for each group is 60 respondents, determined by referencing the results from the sample formula table.<sup>30</sup>

## **Results**

This research was conducted at an Elementary School in Cirebon Regency, where 60 students were divided into an intervention group and a control group. In the intervention group, there were 10 men and 20 women, while in the control group, there were 13 men and 17 women (Table 1).

The study's results comprised knowledge data assessed both before and after providing learning videos to elementary school students during the adaptation period to new habits.

Table 2 illustrates the difference in the average scores of students' knowledge, starting from day 1, with the intervention group scoring an average of 12.00 and the control group scoring 12.03. On day two, the average knowledge score in the intervention group was 22.13, while the control group scored 16.83. On day 3, the average score for the intervention group was 28.33, compared to the control group's score of 19.93.

Table 3 indicates that the significance value of the p-value is 0.001 ( $p<0.05$ ), signifying a significant difference between the intervention and control groups. This implies that the application of the learning model for the management of dental health promotion using the online method with video is more effective in increasing knowledge compared to using other media.

## Discussion

Dental and oral health promotion is a process of providing information that arises on the basis of dental and oral health needs with the aim of producing good dental and oral health and improving the standard of living. Efforts have been made to provide media that is easy to understand and accessible to the public. Media is one of the things that needs to be considered when carrying out health promotion. The media commonly used in health promotion, namely audio-visual, is a good medium to use because it involves the senses of hearing and sight. One alternative for providing dental health education, especially brushing teeth, is to use videos. Video is an example of audio-visual media. It is hoped that using video as a learning medium can increase students' interest in learning. The research results show that students' interest in learning can increase by choosing the right media in accordance with technological developments and environmental conditions so that learning objectives can be achieved optimally.<sup>31</sup>

The application of the learning model for managing dental health promotion using online methods using videos is more effective in increasing knowledge, as seen from the increase in students' average knowledge scores. According to research results, videos will produce effects in terms of cognitive, affective, and behavioral aspects.<sup>32</sup>

Video is included in audiovisual media because it involves the senses of hearing and sight. Its benefits for promoting dental health include being able to observe more closely what is moving, saving time, and the recording being playable repeatedly, making it easier to absorb knowledge. The dental health promotion videos that are made can be played repeatedly so that students can easily remember and understand the lesson because they do not use one type of sense. The results of Mell Silberman's research show that using visual learning can increase memory by 14% to 38%; according to them, by using videos, children will be more interested.<sup>33</sup>



One of the challenges and considerations is that the development of information and communication technology can be used as a means to develop oneself in the process of knowledge transformation, one of which is with video. It is hoped that using video as a learning medium can increase students' interest in learning. Students' interest in learning can increase by choosing the right media, in accordance with technological developments and environmental conditions, so that learning objectives can be achieved optimally.<sup>34</sup>

## **Conclusions**

The learning model for dental health promotion management using the online method with videos is more effective in increasing dental health knowledge among elementary school students during the adaptation period for new habits. The advantages of video for dental health promotion include the ability to observe movements more closely, save time, and play recordings repeatedly, facilitating the absorption of knowledge. Video is categorized as audio-visual media because it engages both the sense of hearing and the sense of sight.

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**Table 1.** Demographic characteristics.

Sex	Intervention		Control	
	n	%	n	%
Male	10	33.3	13	43.3
Female	20	66.7	17	56.7

**Table 2.** Description of knowledge in the intervention group and control group.

	Intervention group			Control group		
	1	2	3	1	2	3
Mean	12.00	22.13	28.33	12.03	16.83	19.93
Minimum	7	15	25	7	9	12
Maximum	25	30	30	25	30	30

**Table 3.** Results of analysis (Mann-Whitney): the effect of learning models on the management of dental health promotion using online methods with video.

Variable	Total	Mean	(p-value)
Intervention Group	30	42.75	0.001
Control Group	30	18.25	

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