



## Effectiveness of counseling with cartoon animation audio-visual methods in increasing tooth brushing knowledge children ages 10–12 years<sup>☆</sup>



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Received 29 May 2019; accepted 15 July 2019

### KEYWORDS

Attitude;  
Animated cartoon;  
Audio-visual;  
Knowledge;  
Toothbrushing

### Abstract

**Objective:** To find out the effectiveness of counseling with cartoon animation audiovisual method in increasing the knowledge of brushing teeth.

**Methods:** This study was a pre-experimental study with one group pre-test post-test design with a cross-sectional approach. This study was conducted on children aged 10–12 years old at Toddopuli Superior Primary School in Makassar City, Indonesia. Assessment of knowledge level on tooth brushing was based on the choice of answers to the questionnaire question. The effectiveness of increased tooth brushing knowledge was measured by comparing the mean test scores pre and post-test counseling, using t-paired analysis.

**Results:** The average value of subjects before and after counseling is in a good category. Fifteen (18%) of children are in the category of a sufficient level of knowledge. After counseling, there are 82 (98.8%) of children are in the category of good knowledge level. There are only 1 (1.2%) of children in the sufficient category, and none in the category lack of knowledge.

**Conclusion:** Counseling with cartoon animation audiovisual method effectively increases the knowledge of brushing teeth of children aged ten to twelve years.

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<sup>☆</sup> Peer-review under responsibility of the scientific committee of the International Conference on Women and Societal Perspective on Quality of Life (WOSQUAL-2019). Full-text and the content of it is under responsibility of authors of the article.

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## Introduction

Dental and oral health is an important part in achieving general health and quality of life. Maintenance of dental and oral hygiene is an important factor in achieving dental health, which can be done by brushing teeth.<sup>1</sup> Dental and oral health counseling should be given to school-aged children. Through the counseling program is expected to increase the knowledge and awareness of children about the importance of maintaining oral health and can participate actively in improving self-care efforts. In addition, with counseling, a person can make a self-effort in the prevention of dental and oral disease. The delivery of counseling materials to the target other than the method to be used is also influenced by the presence or absence of aids or supporting media for delivery. Supporting aids or media are very important when used for counseling because the tools are used by educators in delivering educational or teaching materials. Educational media in improving dental and oral health in children such as multimedia, especially animated cartoons that have been explored widely can be used as teaching aids. Studies report that teaching by using animation techniques will improve students' academic performance.<sup>1,2</sup>

Early primary school students need to be educated to be able to maintain the health of their teeth. Class V and VI students aged between 10 and 12 years. Children at age 10–12 years old can already get an understanding and can explain about something realistically. And at the age of 10–12 years, children have been able to do brushing teeth systematically when compared with the age group below them. Because of that, dental health should be maintained early so that children can have good permanent teeth.<sup>3</sup>

Dental health counseling is a planned and directed effort to create a person or group of people want to change old behavior which is less profitable, to be more useful. Through dental health counseling, it is expected that it can increase public knowledge and awareness of the importance of maintaining dental and oral health. The selection of the right method in the process of delivering counseling material is beneficial in achieving efforts to change target behavior. The benefits of video media in learning include attracting and directing students attention to concentrate on the content of the lesson, can be seen from the level of emotional involvement and attitudes of students when listening to the impressions of subject matter accompanied by visualization, helping to understand and memorizing of material content for students weak in reading.<sup>4</sup>

Using audio-visual media in an informative cartoon can be well received by the respondents. It offers an exciting and non-monotonous education, featuring motion, pictures, and sounds<sup>11</sup>. Hence, the purpose of this research was to know the effectiveness of counseling with audio-visual method in improving knowledge of tooth brushing of children aged 10–12 years.

## Methods

This study was a pre-experiment with one group pre-test post-test design and cross-sectional approach. This study was conducted on children aged 10–12 years in Toddopuli

**Table 1** Distribution of the number of subjects by gender and age of children aged 10–12 in Toddopuli Superior Primary School city of Makassar, Indonesia.

Subject characteristics	<i>n</i>	%
<i>Gender</i>		
Male	38	46.3
Female	44	53.7
Total	82	100
<i>Age</i>		
10 years	26	31.7
11 years	38	46.3
12 years	18	22
Total	82	100

Superior Primary School, city of Makassar Indonesia, in November 2017. Research subjects were 82 children.

Assessment of the knowledge level of tooth brushing was based on the choice of answers to the questionnaire question. Each correct answer was given a score of 1, while the wrong answer was given a score of 0. Then the score was added and divided by the number of questions and multiplied by 100%.

Criteria of knowledge assessment  $\leq 50\%$  was less knowledge, 50–75% medium knowledge,  $\geq 75\%$  were a good knowledge.

The research begins with giving directions to the subject about the technical procedures of the research conducted, then distributing the questionnaires sheet as a tooth brushing test before being given audio-visual counseling (pre-test). Next, they were given a visual audio counseling by playing animated video on how to maintain dental health with duration  $\pm 7$  min and just once. Then the questionnaire sheet was distributed as a knowledge post-test being given counseling (post-test).

The effectiveness of increased brushing knowledge was measured by comparing the mean test scores pre and post-test counseling, using T-paired analysis with  $p < 0.05$  were considered statistically significant. Pre-tests were carried out before counseling, and post-tests were given after counseling.

## Results

**Table 1** shows the distribution of subjects based on the characteristics of gender and age. Subjects consisted of 38 male and 44 female children. The subject age range is 10–12 years old. Age 11 years is the age with the highest number of subjects, which is as many as 38 children.

**Table 2** shows the level of brushing knowledge pre and post-test being given counseling with audio-visual methods. Prior to the counseling, there were 66 (80.5%) children in the category of good knowledge level and only 1 (1.2%) of children at the level of less knowledge. A total of 15 (18.3%) children are in the category of medium level of knowledge. Post-test counseling, there were 82 (98.8%) children in good knowledge level category. There are only 1 (1.2%) children in the medium category, and none is in the category of less knowledge level.

**Table 2** Distribution of the number of subjects at the level of brushing knowledge pre and post-test given audio-visual method counseling of children aged 10–12 years in Toddopuli Superior Primary School city of Makassar, Indonesia.

Knowledge level	Pre		Post	
	n	%	n	%
Less	1	1.2	0	0
Medium	15	18.3	1	1.2
Good	66	80.5	81	98.8
Total	82	100	82	100

**Table 3** Mean score of pre and post-test have given audio-visual counseling method of 10–12-year-old child in Toddopuli Superior Primary School of Makassar city, Indonesia.

	Mean	n	p*
Pre	82.50%	82	0.00
Post	91.80%	82	
Increase	9.30%	82	

\* T-test (confidence interval/CI 95%)

The average value of the subject pre-test counseling was 82.5% or was in good category. While the average value post-test counseling increased to 91.8% which is also in good category, with an average increase of 9.3% (Table 3). T-paired T-test results obtained  $p$ -value = 0.000 which means that there is a statistically significant difference in test values pre and post-test the audio-visual counseling method.

## Discussion

The study result showed that the brushing knowledge of children aged 10–12 years in Toddopuli Superior Primary School city of Makassar, Indonesia before being given counseling is good. This can be caused by the condition of the school which is basically a superior primary school, with the quality system, educators and learners better than non-superior schools. In general, superior school students have a higher level of intellectual intelligence than non-superior school students (regular). The theory expressed by Ginanjar in Aziz R. that intellectual intelligence is needed to overcome cognitive (knowledge) problems.<sup>5</sup> Thus it can lead to the average level of knowledge of the subject's toothbrushing before being given counseling is in good category. After being given counseling, the number of subjects who are in the knowledge level of good toothbrushing is increased to 82 children (98.8%), and the remaining 1 (1.2%) of the children are in medium category. This indicates a change in the level of knowledge of tooth brushing on the subject after being given counseling with audio-visual methods.

This study showed a statistically significant difference in the value of the knowledge pre-test and post-test the audio-visual counseling methods. Thus, it can be concluded that effective audio-visual counseling improves knowledge of toothbrush age of the 10–12-year-old child in Toddopuli Superior Primary School city of Makassar, Indonesia. This

is similar to the study by Chowdary which suggests that counseling with the audio-visual method is effective for use in improving teeth brushing knowledge in primary school children.<sup>6</sup>

The results of this study are supported by Shah N. (2018) who suggested that video media can be an effective tool in improving knowledge about oral health in hospital environments.<sup>7</sup> Yanti GN showed that counseling with cartoon video playback method effectively improves knowledge score in second-grade students of Bodhicitta Medan primary School.<sup>8</sup> This study was also supported by Andriany which revealed that the knowledge of dental and oral health of grade V students Primary School 24 Banda Aceh, Indonesia after being given counseling with cartoon animation was better than before given counseling.<sup>9</sup>

Counseling using cartoon video is one of the audio-visual counseling method using computer media, LCD and projector to deliver counseling materials to counseling participants. This counseling requires the ability of sight and hearing (eyes and ears) to receive knowledge information. Notoatmodjo in Hastuti S. revealed that knowledge is derived from the sensing results of a particular object, and much of human knowledge is obtained through the eyes and ears. This audio-visual method has also proven to be effective in increasing knowledge and lowering oral hygiene score in deaf children.<sup>10</sup>

The use of audio-visual aids in science has proven to be an effective way to communicate ideas and concepts of knowledge to students. Some literature has also determined that audio-visual aids have improved student performance in science, especially in students with special needs and slow learners. Animated learning is an effective learning medium that teachers can use to provide students with learning experiences of science.<sup>11</sup>

Davis et al. revealed that media that involves more senses is greater than the written media. The use of video media in learning can provide a more complete learning experience, clear, varied, interesting and fun.<sup>20</sup> Kurt Lewis's theory also states behavioral changes occur because of encouragement or stimuli in the form of counseling or information.<sup>12</sup>

Shah and Khan have stated that the attraction of animated video on the children (student) result in increased attention toward the information given by animation.<sup>7</sup> Our finding showed that both methods have advantages and disadvantages. One advantages of the animation method is it takes less time to educate the children and deliver the information. The animation method requires less effort in the explanation of oral health education comparing to the conventional method. Sinor in his study found that the animation medium was more efficient and sustainable in delivering oral health education compared to conventional method.<sup>13,14</sup>

## Conclusion

Audio-visual counseling with cartoon animation audio-visual methods by using effective animated video enhances knowledge of toothbrushing of 10–12-year-olds in Toddopuli Superior Primary School city of Makassar, Indonesia.

## Conflict of interest

The authors declare no conflict of interest.

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