

## Efficacy of Educational Film for Enhancing Oral Health Knowledge, Attitude and Performance of Elementary Students

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### Abstract

**Objective:** Oral hygiene must start at a young age. Childhood is the perfect time to start the conversion of knowledge into creative thinking and subsequent health care activity. This study aimed to assess the efficacy of oral hygiene instruction via an educational film for oral health promotion of elementary students.

**Methods:** In this experimental, interventional, before and after study, data were collected using an author-designed questionnaire. The validity of the questionnaire was confirmed using face validity while its reliability was approved using Cronbach's alpha statistics. The study population comprised of all four graders of an elementary school in district 14 of Tehran in 2012-2013. An educational package containing an educational film on oral hygiene suitable for children aged 10-12 years was prepared and a questionnaire was designed according to the educational content of the film. The questionnaires were filled by the students before and two weeks after watching the film. Data were analyzed using paired t-test at 0.05 level of significance.

**Results:** Significant differences were noted in level of knowledge, attitude and function of students after the intervention compared to their baseline state. According to t-test, the mean knowledge, the mean attitude and the mean short-term performance scores after the intervention were 15.43 (0.9 increase) ( $p < 0.05$ ), 28.11 (9.35 increase) ( $p < 0.001$ ) and 26.79 (9.02 increase) ( $p < 0.001$ ) respectively.

**Conclusion:** This study indicated the positive effect of instruction via an educational film on knowledge, attitude and short-term performance of students in terms of oral hygiene. Health workers must plan such effective interventions to promote public dental health.

**Key words:** Educational film, Hygiene instruction, Oral and dental health, Students.

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### Introduction:

Oral hygiene must start at a young age. Childhood is the perfect time to start conversion of knowledge into creative thinking and subsequent health care activity. Thus, promoting oral and dental health of students has been highly emphasized worldwide (1).

Children often experience dental caries before the age of 5. Incidence of limited daily activities is 12 times higher in children with poor oral health than healthy children. More than 50 million school hours are lost due to oral and dental problems, which can greatly affect the

performance and success of children at school. Schools can highly participate in oral and dental health promotion programs for children because more than one billion children worldwide may be accessed in schools (2). Hygiene instruction using newly introduced innovative and fun instructional methods in a tension-free environment seems to be able to effectively promote oral and dental health. This can be efficiently done at schools. However, it should be noted that sole emphasis on oral and dental hygiene is not sufficient and conversion of knowledge into active thinking and health activity requires a changed attitude (3).

Mohamadkhah, *et al.* (2013) evaluated the effect of education using multimedia on oral health behavior of students and compared its efficacy with lecture instruction in Chabahr. In the group trained with lecture and film, knowledge and attitude improved 3 and 5 months following the intervention, respectively ( $p < 0.001$ ). In film group, performance immediately improved after the intervention but not significantly ( $P = 0.07$ ). Overall, at all time points, educational film was more effective than lecture (4). Lafzi, *et al.* (2005) evaluated the role of oral and dental hygiene instruction in decreasing dental plaque and demonstrated that after two months of instruction, a significant reduction occurred in plaque index (from 72% to 38%). This reduction was greater in females. Thus, researchers believe that oral hygiene instruction can effectively decrease plaque index (5). The purpose of this study was to assess the efficacy of educational film for enhancing oral health knowledge, attitude and performance of elementary students.

### Methods:

This experimental, before and after study was conducted on all four graders of an elementary school in district 14 of Tehran. All four graders ( $n = 50$ ) were selected using census sampling. Data were collected using an author-designed questionnaire. The questionnaire asked for demographic information of subjects and included 10 knowledge questions with four answer choices. Thus, maximum knowledge score was 10 and scores 0-3 indicated low, scores 4-7 indicated moderate and scores 8-10 indicated high level of knowledge. The questionnaire also had 9 attitude questions with 5-point Likert scale answers. “Completely disagree” answer choice was given a score of 1, “disagree” was given a score of 2, “no comment” a score of 3, “agree” a score of 4 and “completely agree” a score of 5. Thus,

maximum and minimum attitude scores were 45 and 9, respectively. Scores “9-15” indicated negative attitude, scores “16-30” indicated moderate attitude and scores 31-45 indicated positive attitude. Oral hygiene performance of students was assessed using 8 questions with four answer-choices. Maximum performance score was 8; scores “0-2” indicated poor performance, scores “3-5” indicated moderate performance and scores “6-8” indicated optimal performance. Validity of the questionnaire was ensured using face validity by applying the opinions of experts. For reliability assessment, Cronbach’s alpha was calculated (Table 1). Since all coefficients obtained for questions in the fields of knowledge, attitude and practice were over 0.7, the questionnaire had acceptable reliability.

**Table 1- Reliability coefficients of the questionnaire**

Variables	Number of questions	Cronbach’s alpha coefficient
Performance	8	0.7382
Attitude	9	0.7696
Knowledge	10	0.7203

After necessary coordination with the Ministry of Education and the school principle and obtaining the necessary permissions, mothers of the target group students along with students themselves were briefed about the objectives of the study and how to fill out the questionnaire. They were ensured about the confidentiality of information, and the importance of giving an honest answer was emphasized. Questionnaires were administered among students. Upon completion, student responses were thoroughly studied and with the help of the Oral and Dental Health Office of the Ministry of Health and also the Health Office of the Ministry of Education, educational content of the film was selected. A 45-minute educational film was prepared and saved on a compact disc and approved by the health technicians of both ministries. The educational film called “White Pearl” included

practical instruction of correct tooth brushing, dental flossing, duration of tooth brushing, and some important points in this respect. The film was shown in one session. Two weeks later, students were provided with the same questionnaire. It should be noted that performance questions were asked from mothers. Data were analyzed using SPSS 16 and paired t-test.

## Results:

Of 50 respondents about the age variable, 53.1% were 10 years of age (highest frequency) and 46.9% were 11 years old. In terms of household size, 32% reported having up to 3 family members living with them, 46% reported 4 and 22% had 5 or higher family members in the same household. Level of education of parents was mostly college degree or Bachelor's degree: 24% had high school diploma or lower level of education, 56% had college or Bachelor's degree and 16% had Master's degree or higher. In terms of mother's age, of all respondents, 30% were younger than 35 years, 44% were between 35-39 years and 26% were 40 or older. In terms of

level of income, 42% (highest frequency) had acceptable level of income (1,000,000 to 1,500,000 Toomans monthly), 22% were low income (less than 700,000 Toomans), 34% had moderate income (700,000 to 1,000,000 Toomans), and 2% had high income (over 1,500,000 Toomans). Most students reported brushing their teeth once daily but did not use dental floss. In terms of factors responsible for tooth decay, 17% reported microbial activity, 40% reported food consumption and 43% reported poor oral hygiene to be responsible. Of all, 74% reported visiting a dentist only when they had dental problems. The main reason of avoiding dental visits was found to be fear of dental procedures (68%). Comparison of pre- and post-intervention scores revealed a significant improvement in knowledge, attitude and performance scores. Before the intervention, most students scored moderately while after the intervention, most students acquired acceptable scores. It means that education improved oral hygiene practice of students (Table 2). The difference in this respect was significant ( $p<0.001$ ).

**Table 2- Knowledge, attitude and performance scores of students before and after the intervention**

Variables	Before		After		Change		Significant P-value
	Mean	SD	Mean	SD	Mean	SD	
Knowledge	14.53	0.5413	15.43	0.4811	0.9	0.0602	$p<0.05$
Attitude	18.76	0.6409	28.11	0.5242	9.35	0.1167	$p<0.001$
Performance	17.77	0.4962	26.79	0.4171	9.02	0.0791	$p<0.001$

Based on the results, 53% of students still had poor and moderate knowledge after the intervention but in 26.1%, poor and moderate knowledge was enhanced to good knowledge by the intervention. Also, 31.9% of students still had negative or moderate attitude but 53.9% gained positive attitude after the intervention. In terms of performance after the intervention, 34.7% had poor and moderate performance while 57% gained acceptable performance.

Before the intervention, household size was

significantly correlated with knowledge and performance ( $p<0.05$ ) but no such association was found between attitude and household size ( $p>0.05$ ). A significant correlation was found between the level of education of parents and attitude of students ( $p<0.05$ ) but no association was found between level of education of parents and knowledge or performance of students ( $p>0.05$ ). Also, no correlation was found between level of income and knowledge, attitude or performance of students ( $p>0.05$ ) (Table 3).

**Table 3- Correlation of level of education, income and household size with knowledge, attitude and performance scores of students regarding oral health**

Variable	Level of education	Level of monthly income	Household size
	P-value	P-value	P-value
Knowledge	0.558	0.685	0.015
Attitude	0.003	0.593	0.204
Performance	0.558	0.529	0.035

**Discussion:**

Oral and dental diseases lead to tooth loss, affecting the quality of life, nutrition and growth and development of children. This indicates the importance of oral hygiene in children younger than 12 years of age. Tooth decay is a chronic infectious disease not prevented by the use of antibiotics. Within a short period of time, all teeth may be involved. Tooth decay is not self-limited and its detection and treatment require costly dental procedures by professionals (3). To promote public oral and dental health, oral hygiene instruction is necessary. The media can greatly help in this regard and multimedia instruction is known as an effective technique for health instruction. In the current study, an educational film recorded on a CD was used for health instruction to students and the results showed that educational film enhanced the knowledge, attitude and short-term performance of students after adjusting for confounders. These results are in accord with those of Mohammadkhah, *et al.* (2013), Birang, *et al.* (2006) and Mazloomi-Mahmoodabad, *et al.* (2009) who reported that multimedia education enhanced the attitude, knowledge and performance of subjects in terms of oral hygiene (4, 6, 7). No association was found between age and knowledge ( $p=0.91$ ), attitude ( $p=0.683$ ) or performance ( $p=0.567$ ) of students; this finding was in contrast to that of Haerian Ardakani (2012)(8). This difference may be due to the fact that in our study, students were in close age range (10 and 11 years old); while Haerian Ardakani evaluated a group of adults with

variable age range.

The correlations between household size and knowledge ( $p=0.015$ ) and performance ( $p=0.035$ ) were significant but this association for attitude ( $p=0.204$ ) was not significant ( $p>0.05$ ). In other words, the smaller the household size, the higher the knowledge and performance scores; this indicates the effectiveness of face-to-face instruction by the parents. In smaller families, parents have more time and energy to enhance the knowledge and improve the performance of their children regarding oral hygiene. These findings are in accord with those of Porhashemi and Mahmodian (1993)(9).

Our study found no association between level of education of parents and knowledge of students ( $p=0.558$ ). A significant association was found between level of education of parents and attitude of students ( $p<0.01$ ), which confirms the results of Fallahinejad Ghajari, *et al.* (2007)(10). Level of education of parents was not correlated with the performance of students ( $p=0.558$ ) which confirms the results of Haerian Ardakani (2012) (8). No correlation was found between level of income and the knowledge ( $p=0.685$ ), attitude ( $p=0.593$ ) and performance ( $p=0.529$ ) of students; this finding is in contrast to that of Porhashemi and Mahmodian (1993) (9). Small difference in classes of income level may be responsible for lack of a significant difference in this respect.

**Conclusion:**

We could not assign a control group because the

time of study conduction was the time of student exams. However, since only 2-weeks time was allowed between the pre-test and post-test, the effect of confounders was probably insignificant. The results showed that instruction via educational films greatly enhanced the knowledge, attitude and performance of students if prepared based on the needs and age of students. Such health instructions must be included in the educational curricula of schools for oral health promotion.

### **Suggestions:**

Future studies are required to assess factors

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affecting oral hygiene in different populations.

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### **Conflict of Interest: "None Declared"**