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**The Effect of Digital Media Programs on the Oral Health Promotion in the
Health Office: A Quasi-Experimental Study**

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Abstract

Introduction: Regular using of the toothbrush, mouthwash and dental floss is useful in prevention and treatment of the oral diseases.

Aims: This paper examines the impact of an educational film on the promotion of the student's oral health behavior.

Methods and Material: This research was conducted in Chabahr in 2011-2012, on 10-12 year old girls .Three hundred students were randomly assigned to three groups of 100. The type of the intervention included film and lecture. Post tests were conducted in two phases: immediately and 3 months after the first intervention.

Statistical analysis used: The research data from valid and reliable researcher-made questionnaire was analyzed by the SPSS Version 16 using One-way Analysis of Variance (ANOVA) and Mann-Whitney U tests. The study was approved by the ethical committee of Tarbiat Modares University.

Results: The highest rate of the birth order in the study population was two, mean age of students was 11 years, and the mean number in each family was five. The average education level of mothers and fathers was illiterate and literacy respectively. The majority of fathers were unemployed and mothers were housewives. Most of the families had private housing. Mean decayed missed filled teeth (DMFT) was: 1.46 + 1.66 .The level of the knowledge and attitude about teeth brushing was increased immediately

and after the intervention (P-value < 0/001). The rate of practice increased after 3 months (P < 0/001). The level of the knowledge and attitude about dental flossing increased immediately and after 3 months. The rate of the practice did not increase after 3 months (P < 0/46) .

The level of the Knowledge about using the mouthwash increased immediately after the intervention and after 3 months (P < 0/003). The rate of the practice did not increase immediately after the intervention (P < 0/43). The film intervention was effective on the students' Knowledge immediately and 3 months after the intervention (P < 0/025). The film effectively influenced students' attitude both immediately and 3 months after the intervention (P < 0/028). Taken all together the study shows that the oral health practice is worse in the families with the lower socio-economic situation.

Conclusions: Using educational film could be effective in promoting students' self-care behaviors.

Keywords: Education; Educational Lecture; Digital Media.

KeyMessages: Oral health self-care methods like using dental floss, brushing and fluoride therapy are effective techniques for preventing the dental decay and periodontal diseases. It seems educational interventions could change unhealthy habits and prevent oral diseases in people who may not brush and floss routinely. In this regard, some scholars and experts have introduced media, especially visual media as one of the most important methods in oral health education. The results of this study confirmed the effectiveness of educational film in promoting students' self-care behaviors.

Introduction

Oral health is an integral part of public health as well as one of the most important cores in health education (1, 2). Oral health level significantly affects the quality of one's life and enables him/her to be self-confident, well communicate with others, chew food with any problem and socialize without any diseases, discomfort and embarrassment (3). Because the oral diseases can lead to irreversible damages and unnecessary pains and the severe consequences including dental, public health problems, low self-esteem, poor quality of life and chronic infections (2, 4).

Despite the considerable efforts in the developing countries, the level of the dental decay has increased because of dietary changes and has remained more prevalent in some developing countries (5).

Self-care methods pertaining to oral health like using dental floss, brushing and fluoride therapy are effective techniques for preventing the dental decay and periodontal diseases (6).

Changing unhealthy habits and preventing oral diseases seems to have a crucial role in educational interventions with a special focus on the people who may not brush and floss regularly. The health education is one of the most im-

portant responsibilities of health educators in preventing the oral health diseases (7). In this regard, the use of media, especially visual media has been introduced by some scholars and experts, all over in the world, as one of the most important methods in health education (8).

Ascending trend in the use of technology gives the necessary opportunity to the learners to learn more , better perform, accelerate their learning pace, and have great experience of satisfaction when attending the training sessions (9). A multimedia training package for learners' with low knowledge and skills in the field of learning has been proven to be effective (10). Video tutorial is a communication multimedia that actually provides facts, ideas, attitudes and experiences to the public in the form of a drama or simulation. Film education is very effective in adult education. A film that is described as the premier instructor which, trains with both verbal and none - verbal cues (11). Many universities include using some educational films in their curriculums. Besides, some reports have been published to help the teachers in using the films in the classrooms, like the recent book of "Why and how do we use educational films?" (12).

Videos related to the children development stages are appropriate for educational purposes in students (13).

In order to achieve objectives in the psychomotor domain, the application of moving pictures could be useful in terms of: (14)

- 1- Significant educational objectives have been set, and film content is educational.
- 2- The content of the film has been synchronized with students' previous information.
- 3- Students' educational and recreational interests and needs have been considered in providing of the film.
- 4- The film message has been proportionally tailored to the target group of students.
- 5- The film is able to force the students to think about and reflect on it.
- 6- The film motivates students to do some pertinent researches in order to learn more and share their information with the peers.
- 7- The film should be flexible with students' free time.

Researchers have demonstrated that short videos will have higher educational impacts (13). In this regard, Iranian ministry of Health seeks to evaluate the impact of educational digital media that have been prepared by different universities across the country.

Subjects and Methods

This quasi-experimental intervention conducted on the 300 female students who were in Chabahars' primary schools. The sample size was calculated by $\alpha = 0.05$; power = 0.8; variance: 6.35 according to Taslimi M's study using this equation 1.

$$n = \frac{(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta})^2 (P_1(1-P_1) + P_2(1-P_2))}{\Delta^2}$$

Equation 1. Pocock and simon method

The students were selected by cluster sampling from the fourth and fifth-graders in the primary schools in Chabahar, and were randomly assigned to 3 different groups: control group; intervention group 1, and intervention group 2.

Considering the level of the questionnaire the students in grade 4 and 5 were selected for this study. The three groups were matched in the demographic variables such as; family background, the father's job and the living areas.

The intervention consisted of 23 minutes and 7 seconds of showing the educational film in group 1 and the lecture about the oral health with the

contents of using the self-preventive oral behavior (necessity of brushing, flossing and mouthwash after food and regular visits of a dentist) in group 2.

The film in this study had been previously approved by Iranian Ministry of Health in order to promote the oral health among the students of elementary schools, but its educational impact had not been evaluated before.

The impact of the educational media on students' knowledge, attitude and practice was evaluated after giving the education to the elementary students in Chabahar and its effectiveness was compared with the impact of the lecture with exactly the same content of the film. In This article, only the impacts of the educational film are discussed.

Pre-tests were conducted in all 3 groups. Then intervention was completed in intervention groups with no interference in the control group. The impacts of the educational oral health program were measured on the aspects of the health knowledge, attitude and practice immediately and 3 months after the intervention. The data collected by researcher-made validated and reliable questionnaire ($\alpha = 0/80$, CVR = 0.52 and CVI = 0.83).

The questionnaire was composed of five sections:

- 1- The demographic data: This section included the questions about birth orders, family size, parental literacy level, occupation and living area of the parents.
- 2- Seven Questions relating to the knowledge: to measure the knowledge with 7 multiple choice questions with the same weight in terms of scoring.
- 3- Questions about the attitude: This section included 7 questions to measure students' attitude based on a three-part Likert scale.
- 4- Questions related to the practice: This section included 4 multiple choice questions with the same value in terms of scoring to document students' practice.
- 5- The final section included a question about the source of students' information in the oral health behaviors.

The intervention included an eight minute film based on the concepts of a product called Gandomak Zalzalak developed by Golestan University. The second part of this study was done to compare the same educational content which was transferred via a lecture. Considering the people poverty in the study area and lack of access to modern aid educational tools, and students' classroom as the only space available

for conducting, the researcher attempted to use a laptop to show the film, and a board and markers to have a description on students' questions. In order to make the students fully understand the objectives of the project was fully read and explained for the students.

The data was collected at three different times: prior to intervention, immediately and 3 months after the interventions. The results were analyzed using SPSS (Statistical Package for Social Sciences) version 16. With the level of significance: $P < 0/05$ in the statistical tests of ANOVA, the Mann-Whitney U and the Pearson Correlation Coefficients'. This paper examines the effect of the educational film on the promotion of the student's oral health behavior.

Results

The highest rate of the birth order in the study population was two, mean age of students was 11 years, and the mean number in each family was five. The average education level of mothers and fathers was illiterate and literacy respectively. The majority of fathers were unemployed and more than half of the mothers were housewives. Most of the families had private housing. Mean DMFT was: $1.46 + 1.66$

The demographic variables of the study population are shown in Table 1. According to Mann -Whitney U test, the level of the Knowledge about brushing was 1.94 before the educational film and it was increased immediately after the intervention to 2.11. Then it was reduced to 1.96 after 3 months which was not statistically significant. The level of attitude was 2.34 before the intervention and it was increased to 2.55 immediately after the intervention. Then it was reduced to 1.10 after 3 months. This reduction was statistically significant ($P < 0/001$). The level of the practice was 2.04 before the intervention and it was increased to 2.18 immediately after the

intervention and it was reduced to 1.79 after 3 months of the intervention which was statistically significant ($P < 0/001$). The same trend happened for flossing (Table 2) and using the mouthwash (Table 3).

About visiting the dentist the knowledge changed from 1.93 to 2 and 2.06; the rate of the attitude from 1.86 to 2.05 and to 2.08 ($P < 0/028$), also, the rate of the practice from 2.07 to 2.02 and to 1.92 ($P < 0/034$) (Table 4).

Totally, 79/6% of the students, didn't use dental floss and 79%, didn't use mouth wash because didn't have those. The majority of the students (87/6%) were not able to afford visiting a dentist.

Table 1. The Demographic Variables of the Study Population

Variable	Number or attribute (percent %)
Students' age	10 year old (46/3%) 11 year old (53/7%)
Birth order of the students	1 (20%) 2 (23.3%) 3 (20.3%) 4 OR 5 (19.7%) 6 And more (16.4%)
The family number	3 or less (16.7%) 4 (14.3%) 5 (17%) 6 (14.7%) 7 (11%) 8 or more (12%)
The level of fathers' education	Illiterate (21.3%) Primary (26%) Guidance (20%) Diploma and above (32.6%)
The level of mothers' education	Illiterate (43.7%) Primary (31.7%)

	Guidance (13%) Diploma and above (11.6%)
Fathers' job	Unemployed (25%) Worker (19.7%) Employee (25.7%) Free (29.7%)
Mothers' Job	Housewives (76.3%) Non- Housewives (23.6%)
Housing	Private housing (51.7%) Rent (32.7%) Other (15.7%)

Table 2. Distribution of the Mean and SD of the Knowledge, Attitude and Practice of Flossing In the Educational Film Group

The educational film group		The rate of the practice 3 months after the intervention	The rate of the practice immediately after the intervention	The rate of the practice before the intervention	The rate of the attitude 3 months after the intervention	The rate of the attitude immediately after the intervention	The rate of the attitude before the intervention	The rate of the knowledge 3 months after the intervention	The rate of the knowledge immediately after the intervention	The rate of the knowledge before the intervention
	Flossing	The Mean	1/96	2/08	1/96	2/08	2/08	2/10	2/10	1/73
		The SD	0/79	0/75	0/80	0/83	1/13	0/93	0/86	0/82
	The Result	P < 0/46			P < 0/008			P < 0/001		

Table 3. Distribution of the Mean and SD of the Knowledge, Attitude and Practice of Using Mouthwash in the Educational Film Group

The educational film group	The rate of the practice 3 months after the intervention
	The rate of the practice immediately after the intervention
	The rate of the practice before the intervention
	The rate of the attitude 3 months after the intervention
	The rate of the attitude immediately after the intervention
	The rate of the attitude before the intervention
The rate of the knowledge 3 months after the intervention	
The rate of the knowledge immediately after the intervention	
The rate of the knowledge before the intervention	

Using the mouth-wash	The Mean	1/93	2/07	2/01	1/92	2/13	1/95	2/01	2/14	1/85
	The SD	0/60	0/48	0/64	0/64	0/59	0/70	0/67	0/75	0/77
	The Result	P < 0/003			P < 0/049			P < 0/43		

Table 4. Distribution of the Mean and SD of the Knowledge, Attitude and Practice of Regularly Visiting the Dentist in the Educational Film Group.

The educational film group	Visiting the		The rate of the practice 3 months after the intervention	The rate of the practice immediately after the intervention	The rate of the practice before the intervention	The rate of the attitude 3 months after the intervention	The rate of the attitude immediately after the intervention	The rate of the attitude before the intervention	The rate of the knowledge 3 months after the intervention	The rate of the knowledge immediately after the intervention	The rate of the knowledge before the intervention
		The Mean	1/93	2	2/06	1/86	2/05	2/08	2/07	2/02	1/92
		The SD	0/62	0/55	0/53	0/67	0/67	0/57	1/02	1/06	1/04
	The Result	P < 0/25			P < 0/028			P < 0/34			

Discussion

The results of this study represented that there was a significant difference between the health behavior of the students who had received the health education in the school and those who had been deprived of health-related services and activities in the school. This was in concordance with the conclusion of Ilia and Ibonos' study which showed that the health education had positively changed the behavior of the intervention group (15). As the study of Lafzi A and colleagues in 2005, this

revealed the efficacy of education in reducing the plaque index (16). Or the study of Malek Afzali and colleagues in 2001 which reported that the health education by the health volunteers could increase the health knowledge in the villages (17).

The Results of Birang and colleagues' study showed that students' knowledge about the oral health had significantly increased immediately and a month after watching the educational film. (18). The level of the Knowledge and Attitude about flossing and brushing the

teeth had been increased immediately and 3 months after the intervention ($P < 0/001$). The rate of practice had been increased after 3 months ($P < 0/001$). The result of the present study supported by PRIDEAUX study (19). Dennis and colleagues' study in 2002 revealed that the use of multimedia methods was effective on the change of the learners' attitude. Because the learners could take the advantage of the educational CD based on their best time at any time (20).

Another study titled showed that media can play an important role in creating a realistic and high quality learning environment. Besides, it allows the teacher to have greater control over the learner, especially over the educational classes with a large number of learners, and it increases the learner ability in learning new sciences and skills (21).

In Marilan' study Learners could remind 56 percent of all the content in an tailored educational video and 36 percent of all the information while watching TV. It means educational films could bring long-term effects on learners' knowledge (22). Also, the studies by Kolz in 1996 and Aley in 2004 confirmed the usefulness of visual media such as showing a film on changing the knowledge and attitude of the audience (23).

In this study population, the mean DMFT was $1.46 + 1.66$. This index in Iran globally among students at all levels of education was 1.5 in 1379-1380 (24). According to the students in our study, 79.6% of them didn't use dental floss and 79% of them didn't use mouth wash because didn't have them. 87/6% didn't go to see the dentist because they could not afford it. Taken altogether the results of this study showed that oral health performance is worse in the families with the lower socio-economic situation. Also, Oliver in Brazil (25) Zarringhalam in Mashhad (26) Albander (27) and McDoland (4) found that the oral health status of the students with the lower socioeconomic status were worse than the others. Aida in Japan showed that there was a significant relationship between the parent's occupation and the As, Fallahinadjad stated that there was a significant relationship between the amount of the students' knowledge and attitude and their parent's occupation and in Zahedan (28). Henrie Treadwell believes that 80 percent of the tooth decay occurs in children who are poor (27).

A study in Ahvaz showed that students who had received the health information from their teachers had better oral health behaviors (29).

According to Zafarmand's research in Tehran the most important sources of students' information were their school and teachers (30).

Conclusions

It is hoped that the results of this study could help the relevant authorities to make better decisions and support better interventions in order to improve students' oral health. It could be confirmed that using the educational films could not only improve the level of students' knowledge and attitude but also the rate of their practice on the way to improve their oral health status. Therefore, it is recommended to use the educational intervention to improve the oral health status of the students. It is also necessary to introduce poor and needy students to the public health centers and financially support their families to follow the requested treatments

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