

THE EFFECT OF HEALTH EDUCATION ON AWARENESS AND PERFORMANCE OF PATIENTS WITH PERIODONTITIS AND GINGIVITIS

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Abstract: -

Introduction:

Oral diseases such as dental caries and periodontal diseases are very common and not only have physical, but also economic, social and psychological consequences. Periodontal diseases are the main cause of tooth loss and as a result of a public health problem. Children, adolescents and adults are affected. The aim of this study was to determine the effect of health education on the level of awareness and performance of patients with periodontitis and gingivitis.

Materials and methods:

In this clinical trial study, 196 people with periodontitis and gingivitis were randomly divided into two groups of 98 subjects. Patients were evaluated for plaque index and depth of pocket. Questionnaires were provided to both groups. In both groups, non-surgical treatment (scaling and root planning) was performed, but oral health education was done only in the intervention group. Oral health education, brushing in the standard Bass method, and the correct use of dental floss twice a day. The results were analyzed using ANOVA, Chi-square, t-test and linear multivariate test.

Results:

The pre-test results did not show a significant difference in the demographic and baseline data of the participants in the two groups. There was no significant difference in the awareness, performance, plaque index and depth of pocket before the beginning of the study. There was a significant difference between the two groups after intervention ($p < 0.001$).

Conclusion:

Regarding the results of this study, it can be concluded that health education and educational programs have led to improvement of oral health behaviors and decreasing plaque and depth of pocket in persons.

Key words: - Periodontitis - Gingivitis - Education-Awareness

Introduction:

The need to prevent human disease is well known, and in this context it is important to prevent the occurrence and progression of the disease process. Today, a wide change in oral health by various factors such as dental programs, oral health and dental health in the population General and access to oral health professionals (1). Oral and dental diseases such as dental caries and periodontal diseases are very common and not only have physical, but also economic, social and mental-psychological complications (2). Gingivitis begins in childhood and increases with age (3). Age increases and systemic diseases can affect the health and function of the mouth. In this connection, the relationship between periodontitis with an increased risk of permanent mortality has been (4). The World Health Organization estimates that around 20% of adults between the ages of 35-44 have severe periodontal disease. However, less severe cases of the disease can be found in 90% of the population (5). Severe periodontal disease is the sixth common disease in the world and is one of the main causes of partial or complete loss of teeth (6). By 2020, more than one billion people in the world are aged over 60, of which two thirds of the population live in developing countries. In Iran, according to the latest statistics from the health ministry, 7.3% of the population is elderly. (7). Increased evidence has shown that there is a significant correlation between periodontitis and an increased risk of vascular disease, including coronary artery disease and stroke, as well as diabetes (8). Studies have also shown that periodontal disease is an important risk factor for the birth of infants is low in weight and bone loss is a common feature of periodontal disease and osteoporosis (9). It has been proven that people with periodontitis are 4 times more likely to have rheumatoid arthritis (10). Clinical findings of chronic untreated periodontitis include the formation of a high gum and perineal plaque that is often associated with mass formation, gingival inflammation, pocket formation, loss of joints and bone alveolar analysis (11). Gingivitis is an inflammatory disease of the gum that is associated with Symptoms such as increased volume, color changes, form and gum congestion, and bleeding during probe are indicated. The bacterial plaque accumulating due

to the lack of health around the teeth is the main cause of the disease (12). Bacterial plaque is one of the most important factors in the development and development of gingivitis and periodontitis (13). Health education is a key strategy in the process of acquiring behaviors that promote and maintain health. Education in oral hygiene is very important for promoting it (14). The aim of this study was to determine the effect of health education on the level of awareness and performance of patients with periodontitis and gingivitis.

Method:

This is an experimental clinical trial study. The population of all adults with periodontitis and gingivitis referred to the dental center of Tehran. Random selection of subjects with periodontitis and gingivitis disease were divided into two groups: intervention and control via random block .The number of people in each group is 98. Inclusion criteria: depth of pocket greater than 4 mm, without systemic disease and without smoking. Exclusion criteria are all those who do not have these characteristics and have at least two sessions of absentee training sessions. Patients were evaluated for plaque index and depth of pocket.

Depth of pocket was measured in three points: mesial, mid and distal. All information was recorded in each specialist form. The questionnaire has two parts. The first part contains demographic and background information. The second part of the questions relates to awareness and performance. 10 questions related to awareness with correct answers, false and do not know and 10 questions related to performance with yes, no, and somewhat with the highest score of 2 and the lowest score is zero.

The validity questionnaire of all constructs was assessed. Awareness with score (94%) and performance with score (92%) confirmed the validity. The results of this study showed that all of the studied structures had internal consistency (Cronbach's alpha coefficient), so that the Cronbach alpha coefficient awareness of 70% and 79% performance. In the intervention group, in addition to non-surgical treatment including scaling and root planning ,oral and

dental health education was performed. Oral and dental practice (using replica), brushing the standard Bass and proper use of dental floss twice a day. Individual training was conducted in three sessions (baseline - one month and three months later) for fifteen minutes and

group once for 60 minutes. Patient follow up after one month of referral.

The questionnaire was completed by patients three times.

Indices were recorded every three times.

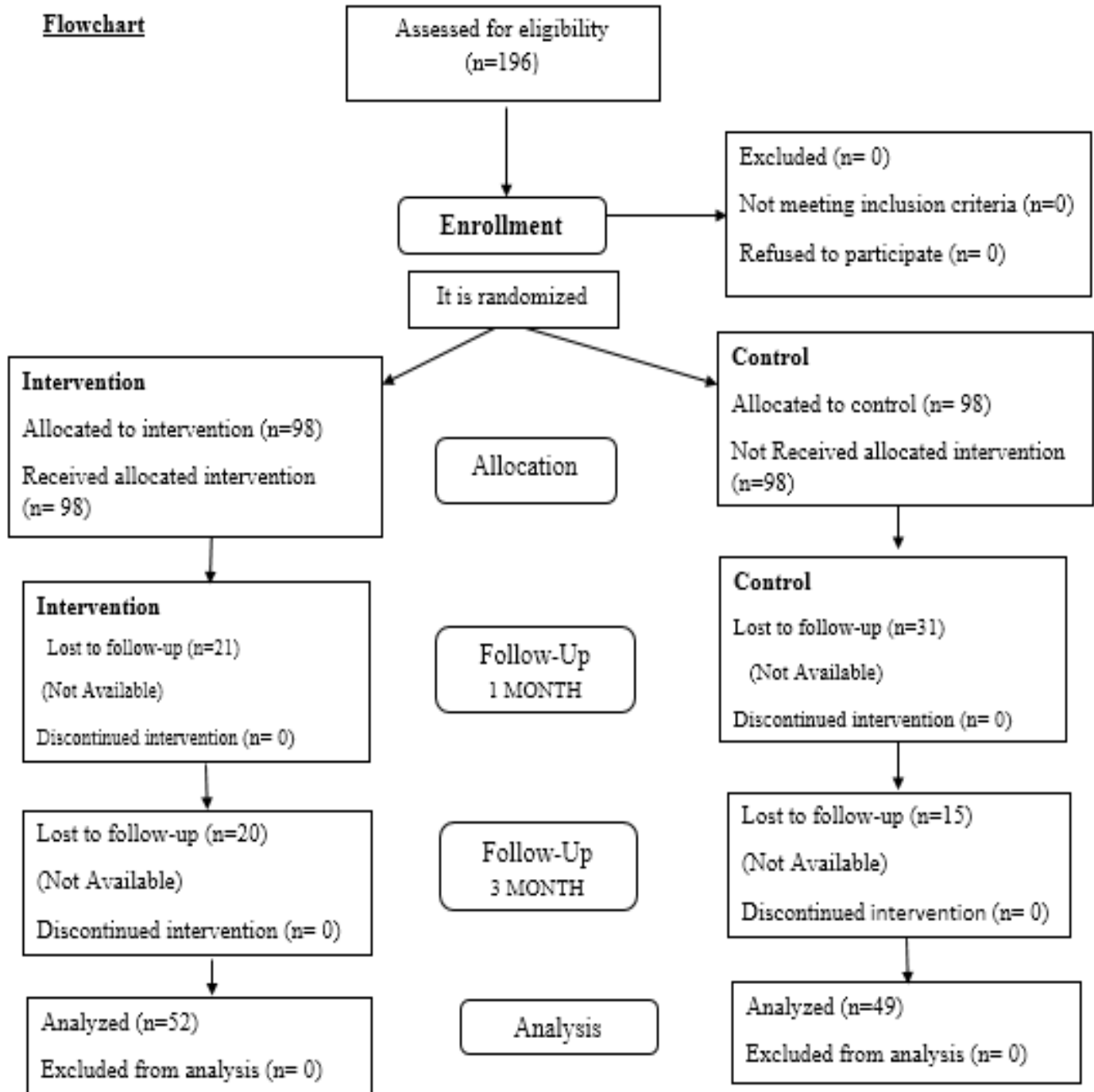


Figure1. Randomize people to the group in the chart

Limitations and The method of reducing it

- The lack of cooperation and the presence of a number of patients in the predetermined days to start treatment and education - Telephone calls and coordination with people one day before the start of education and treatment.
- Flawed completion of the questionnaire by patients - To reduce the limitations before providing the questionnaire to patients, We will provide sufficient training to complete the questionnaire and its goal of completing it to all patients under study.
- Lack of access to a number of patients after starting treatment and monthly follow-up.
- The need to repeat the sessions for the target group because all individuals did not come on a day.
- Lack of readiness for attending meetings because they only came to visit.

Given the fact that this research was conducted at a dental center in Tehran, it is suggested that a more extensive research be carried out in other centers and with a larger population to generalize the results to the whole society.

Results:

In this study, 196 people (67 men and 129 women) participated (Table 1). Of these, 52 had periodontitis

and 144 had gingivitis. The mean age of the participants was 40.62 ± 12.84 years, with a minimum and maximum (18-66 years). According to the table, the highest number of participants in both intervention and control groups is in the age group of 30-40 years. Among the participants, 57 (29.1%) were single and 129 (65.8%) were married. According to Chi-square test ($p = 0.637$), there was no significant difference between the two groups. Also, the level of education among the participants was studied, among which 2 of the illiterate subjects who were randomly assigned to the control group and 97 (49.5%) had higher education than the diploma the distribution of this group was characterized by 52 (53.1%) people in the group and 45 (45.9%) in the intervention group. Using the Mann-Whitney test ($p = 0.264$), there was a significant difference in the level of education could not be seen. Of the other independent variables studied, the income was in this study. 33 (16.8%) of the people with a sufficient income, 142 (72.4%) of the middle-income people and 21 (10.7%) of insufficient income in this study company. There was no significant difference between them according to the Mann-Whitney test ($p = 0.756$). According to the results of statistical analysis of pre-test data, there is no statistically significant difference between the two intervention and control groups in terms of demographic variables (Table 1).

Table 1. Comparison of the demographic variables of the subjects in the intervention and control groups

variable	Category	Total	group		p-value
			intervention	control	
age	Mean (SD)	40.62(12.13)	41.56(13.50)	39.67(12.13)	0.305*
	median	39	40	38	
	30≥	46(23.5%)	26(26.5%)	20(20.4%)	
	30-40	61(31.1%)	26(26.5%)	35(35.7%)	
	41-50	42(21.4%)	18(18.4%)	24(24.5%)	
	51-60	29(14.8%)	17(17.3%)	12(12.2%)	
	60+	18(9.2%)	11(11.2%)	7(7.1%)	
sex	male	67(34.2%)	33(33.7%)	34(34.7%)	0.880†
	female	129(65.8%)	65(66.3%)	64(65.3%)	
job	jobless	55(28.1%)	31(31.6%)	24(24.5%)	0.135‡
	Retired	20(10.2%)	13(13.3%)	7(7.1%)	
	Employee	59(30.1%)	23(23.5%)	36(36.7%)	
	Non-employee	60(31.6%)	31(31.6%)	31(31.6%)	
marital status	Single	57(29.1%)	30(30.9%)	27(27.6%)	0.637†

	Married	139(70.9%)	68(69.4%)	71(72.4%)	
Education level	illiterate	2(1%)	0(0%)	2(2%)	0.264 [†]
	Subdomain	25(12.8%)	16(16.3%)	9(9.2%)	
	Diploma	72(36.7%)	37(37.8%)	35(35.7%)	
	Higher than diploma	97(49.5%)	45(45.9%)	52(53.1%)	
Family history of gum disease	yes	20(10.2%)	8(8.2%)	12(12.2%)	0.345 [‡]
	no	176(89.8%)	90(91.8%)	86(87.7%)	
Family income	Quite enough	33(16.8%)	14(14.3%)	19(19.4%)	0.756 [†]
	Somewhat enough	142(72.4%)	75(76.5%)	67(68.4%)	
	Not enough at all	21(10.7%)	9(9.1%)	12(12.2%)	
Visit times	Twice a year	11(5.6%)	9(9.1%)	2(2%)	0.258 [†]
	More than twice	5(2.6%)	1(1%)	4(4.1%)	
	If there is a problem	180(91.8%)	88(89.8%)	92(93.3%)	
	I will not go	0(0%)	0(0%)	0(0%)	

● T-test

‡ Chi-square

† Mann-Whitney

Before the start of the study, the level of awareness was similar in the two groups ($p = 0.88$). However, after the intervention, within one month, the level of awareness increased in both groups ($p < 0.001$) and also statistically significant differences between the two groups ($p < 0.001$). There was a significant difference in the level of awareness of people in the third month. The results of the table indicate that the level of

performance in the two groups was similar before the intervention and was not statistically significant ($p = 0.214$). If one month after the intervention, this rate has changed and the p-value is less than < 0.001 . The change in the level of performance in the two groups is different for three months and it is statistically significant ($p < 0.001$) (Table 2).

Table 2 .Comparison of awareness and performance in two groups of intervention and control

variable	time	group		paired t-test		95% confidence interval of the difference		p-value
		Mean(SD)		intervention	control	maximum	minimum	
		intervention	control					
Awareness	baseline	40(28.14)	46.12(27.94)	0.001>	0.001>	14.1	-1.7	0.128*
	1month	96.10(12.55)	74.10(26.23)	0.001>	0.001>	-15.4	-28.5	0.001>*

	3month	98.57(5.64)	76.49(20.44)	0.083	0.361	-16.6	-27.5	0.001>*
<i>performance</i>	baseline	55.97(21.29)	59.69(20.48)	0.001>	0.001>	9.6	-2.1	0.214*
	1month	75.37(11.62)	68.36(15.54)	0.001>	0.001>	-2.5	-11.5	0.001>*
	3month	81.27(9.20)	77.03(9.68)	0.001>	0.001>	-0.38	-8.1	0.003*

● T-test

* ANOVA

The results of the table 3 showed that the level of microbial plaque in the two groups was similar before the intervention and was not statistically significant ($p = 0.222$). However, this level was different in two groups after one month after intervention and also

three months later ($p < 0.001$). However, these changes did not show a meaningful difference between months and three months ($p = 0.762$). In addition, based on the paired t-test, changes in three times were statistically significant ($p < 0.001$).

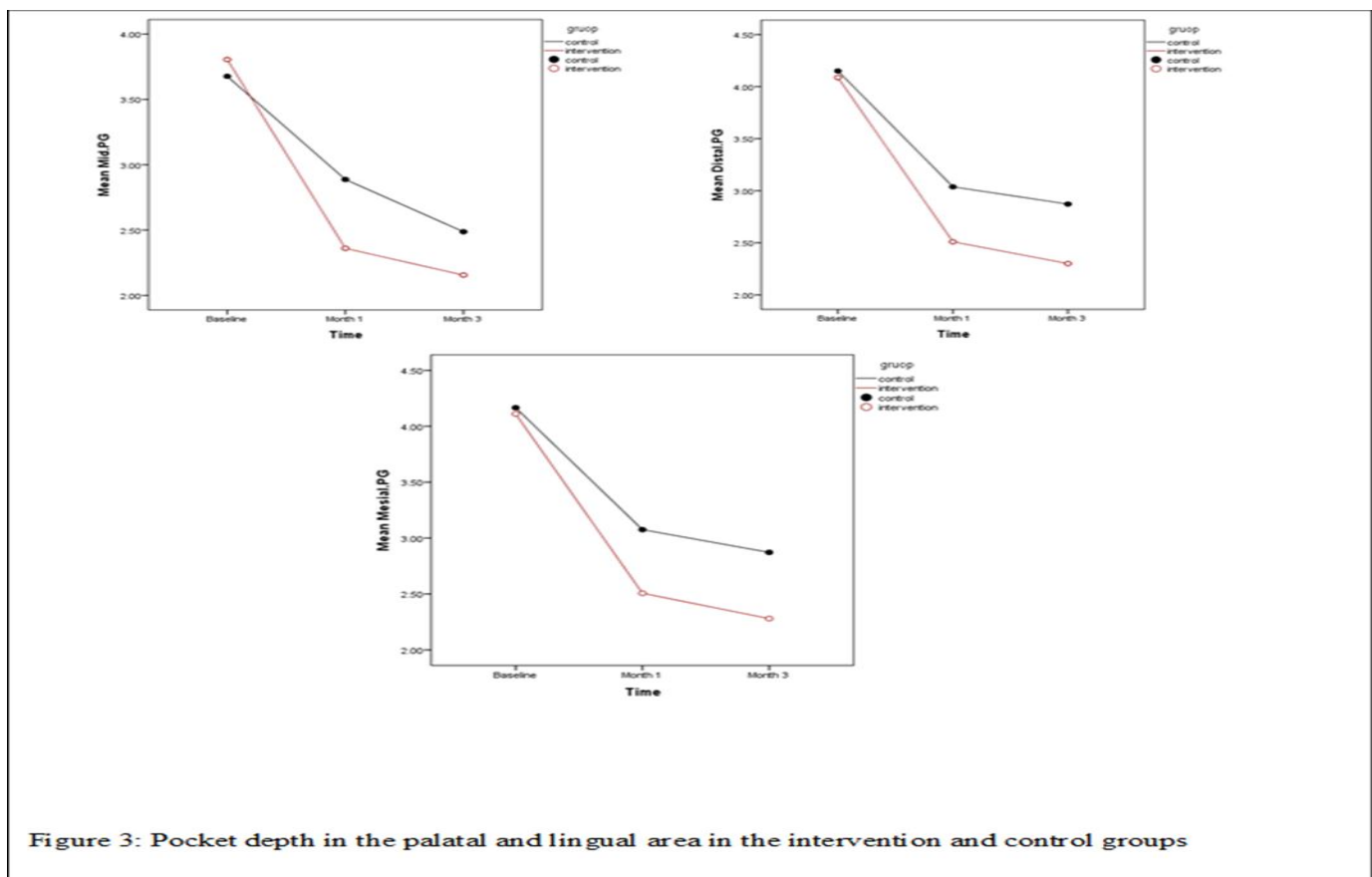
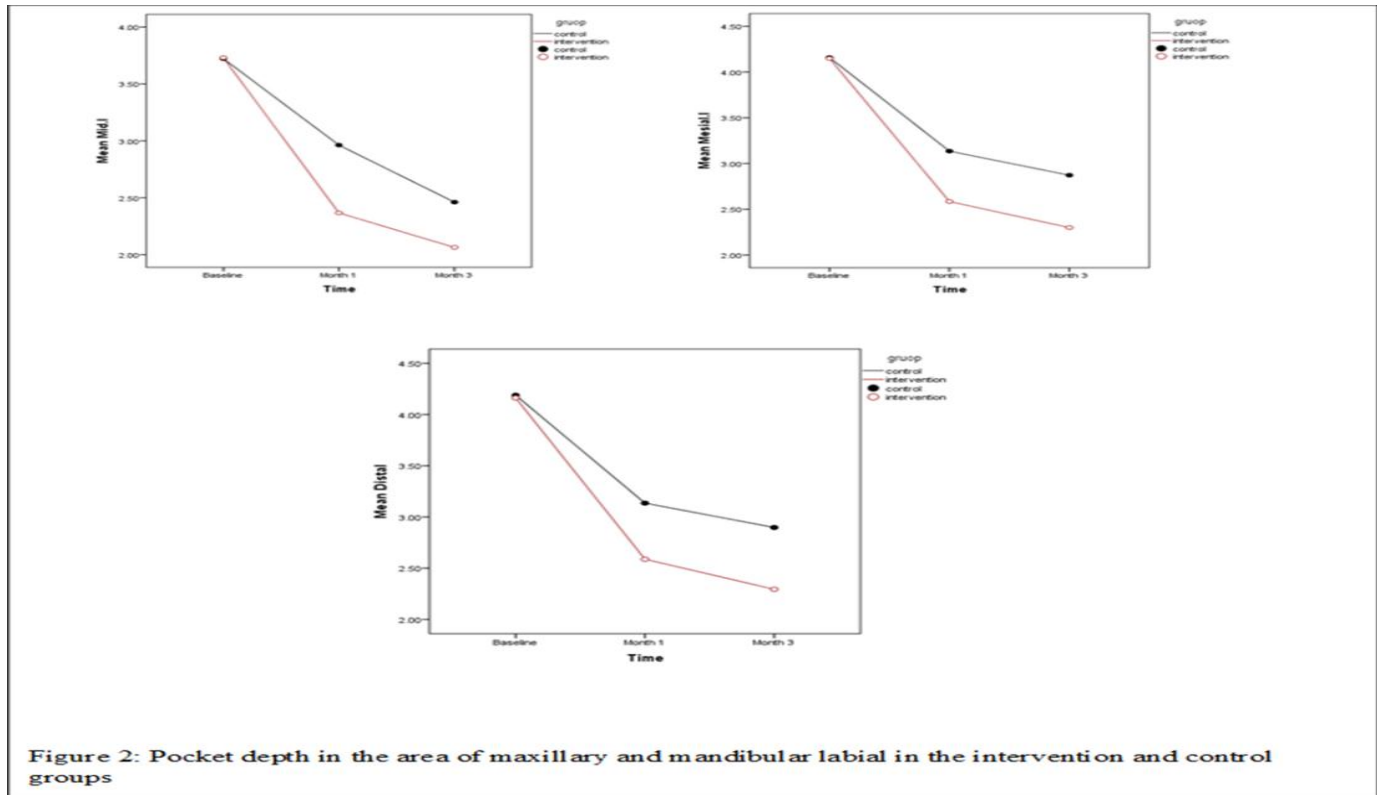
Table 3 .Comparison of microbial plaque index in both intervention and control groups

TIME	GROUP		PAIRED T-TEST		95% CONFIDENCE INTERVAL OF THE DIFFERENCE		P-VALUE
	intervention	control	intervention	control	maximum	minimum	
BASELINE	41(16.44)	44(20.38)	0.001>	0.001>	8.2	-2.1	0.225*
1MONTH	25.57(10.74)	35.48(17.05)	0.001>	0.001>	14.5	5.2	0.001>*
3MONTH	23.57(9.18)	31.92(17.54)	0.079	0.009	13.5	3.01	0.001>*

● T –test

* ANOVA

The depth of pocket was measured in two groups of intervention and control in the form of a chart. As shown in the diagram, we found that the trend between two groups was different with p -value < 0.001 by linear multivariate test (Figure 2&3).



Discussion:

Regarding awareness, the results showed that the mean scores of the intervention group after the training were significantly different from the previous one. In the control group, we saw a lower increase compared to the intervention group. Also, the results showed that there was a significant difference between the two groups after the intervention and three months after the intervention. In the present study, the level of awareness of oral and dental health in both control and intervention groups at the beginning of the study was low, which can be due to inadequate training required by Sohrabi Vafa (15). According to Marino et al., The web-based oral health program has been designed to significantly improve the attitude towards oral health, knowledge and self-efficacy as well as self-reporting practices (frequency of use Of dental floss) (16). According to Ranga et al., Teaching interactive oral hygiene education on adolescents is effective in using proper toothbrush and mouthwashes (17). After intervention, there was a significant increase in the mean of performance score in the intervention group. This difference was significant compared to the increase in the mean of performance in the control group. There was no difference between the two groups before the intervention, while the difference between them after the intervention was significant was. Function or health behavior in this study, the use of toothbrushes and dental floss in an appropriate way was taught and followed up on oral hygiene. The effect of training on the performance of two meaningful groups was found to be consistent with studies by Buglar (18), bicaa (14) and Karami (19) in the field of health behavior change.

The results of the plaque index showed that there was no difference between the two groups before the intervention. But after the intervention, the plaque index in the intervention group was changed in two periods and there was a statistically significant difference between the two groups. This trend has also been less pronounced in the level of microbial plaque in the observation group, which can be attributed to non-surgical actions (scaling and root planning) that are effective in reducing the inflammatory process of the gums. The process of plaque formation can be

divided into three main stages: 1. placing the plaque on the tooth surface. 2. Priming of the bacteria and adhesions. 3. Colonization and plaque maturation. The first stage of plaque formation is after thorough cleaning of the teeth in seconds. Within the first 24 hours, the surface of the tooth is covered with plaque. Within 3 days, plaque growth increases rapidly. After 4 days, an average of 30% of the total crown of the tooth is covered with plaque. This trend adds to the importance of proper oral hygiene in addition to non-surgical treatment (20). The results of Hendi and Wang study on the effect of educational intervention on the reduction of microbial plaque were consistent (21, 22). Also, Nishi's study of the effects of scaling and root planning on the reduction of inflammatory process and gum health in patients with gum inflammation and invasive and chronic germs, which was consistent with the results of this study (23).

The last finding was the depth of the pocket, which did not differ from the two groups before the intervention. However, after the training one and three months later, the depth of pocket in the intervention group showed a significant decrease compared to the control group ($p < 0.001$). As explained in the plaque index, non-surgical treatment also affects reduction in pocket depth, but this trend is less than the intervention group and it shows the effectiveness of training in reducing the depth of the dental bone in the subjects in the intervention group. The results of the study by Jonsson's study on the effect of educational intervention on reducing the microbial plaque and the pocket depth of the tooth (24).

Conclusion:

Regarding the results of this study, it can be concluded that health education and educational programs have led to improvement of oral health behaviors and decreasing plaque and depth of pocket in persons.

Ethics approval and consent to participate:

This study was approved by the Medical Ethics Committee the School of Public Health of Tehran University of Medical Sciences with the number IR.TUMS.SPH.REC.1396.4000.

Also registered at the Clinical Trials Center of Iran.
Trial Id: 20600

IRCT Id: IRCT20151006024381N2

Registration date: 2017-12-28.

Each participant completed a consent form and returned it to us. All patients in the study described that the information contained in the questionnaire is used confidentially and will only be used for this study, and also explained in the questionnaire's header.

Conflict of Interests

Authors have no conflict of interest.

Acknowledgements:

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