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Effect of preventive periodontal health education on the oral hygiene of primary school children

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Abstract

Teachers are believed to be the key in any educational program so they could be targeted in order to enhance the effect of dental health education. A sample of eighty eight of first year primary school children aged 6 – 7 years old were randomly chosen and allocated into two group ,control and experimental (with 44 children in each group). Teaching staff of experimental group were submitted to oral health education program that were conducted for the children in the experimental group only. The total sample were examined using plaque index PLI (silness & Loe) & gingival index GI (Loe & silness). The first examination carried out before the program conduction and the second examination done one month after. A highly significant improvement was recorded among the children in the experimental group after the program conduction. Results of this research support the positive role of the educational programs in the improvement of dental and periodontal health. Therefore, oral health education for school children is an essential activity for promoting, establishing and marinating optimal oral health and preventing oral diseases.

Keywords: Dental Educations, Gingival health, Oral hygiene, Pediatric Dentistry, Prevention.

Introduction

Healthy periodontium plays an important role in the total oral health of the body, especially in childhood, the age when the periodontal disease may begin. During childhood a variety of biological changes take place, some of them may be considered as predisposing factors to the occurrence of the gingival and periodontal diseases as tooth eruption [(1)].The greatest increase in the incidence of gingivitis in children is often seen around 6 – 7 years age , when the permanent teeth begin to erupt. Food debris, material Alba and bacterial plaque often collected around and beneath the free gingival tissues partially covering the crown of the erupting tooth leading to the development of an inflammatory process [(2)].

Although, gingivitis are rarely progress to periodontitis in the preschool and primary school children, recent recognition that periodontal disease may have its origin in childhood has led dentists to be more aggressive in treatment plans directed toward such age groups and for that reason the American Academy of Pediatric Dentistry was called for placing greater emphasis on the prevention and early diagnosis of periodontal disease in children [(3)].

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On the other hand, it is generally assumed that good oral hygiene practices are best acquired in childhood when they may be integrated with other developing health habits [4]. The 6-12 years age stage is marked by acceptance of increasing responsibilities by the children including the responsibility for homework and household chores and in addition, the child can begin to assume more responsibility for oral hygiene. Despite these child behavioral changes the parental involvement is still needed, but instead of performing the oral hygiene, parents can switch to active supervision [5].

The improvement of oral hygiene is considered to be one of the most important goals of dental health education [6]. Primary prevention and education are considered to be the most effective means of decreasing dental and periodontal disease and promoting oral health. Program activities include educational components to modify the behavior patterns of individuals to improve their oral health habits through dietary change, tooth brushing; flossing, sealants and Fluoridated varnish were extensively practiced to improve oral health in different age groups [7-11].

School-age children are the primary focus for educating because the earlier a child is reached; the greater is the potential for positively affecting child's attitudes, values and behaviors. It is well known that the most efficient way to prevent periodontal disease is to control it at the childhood and teenage life. It is also important to take advantage of the school setting where it is possible to reach large number of school children with well planned preventive program [12]. The objective of such oral hygiene education is to produce a change in behavior which will results in a reduction of plaque accumulation to an acceptable level to prevent the initiation and progression of dental caries and periodontal disease.

Conduction of such program needs a large number of dental health educators that may be beyond the ability of most developing countries so the need for involving of members other than dental team seems to be necessary to gap this shortage. So it may be suggested that dental public health staff can at least provide training and consultation to those who work with preschool and school age, for example, the primary school teachers, health department staff, and parents. teachers are believed to be the key in the educational program after their involvement in suitable preventive health educational program to improve their capability for teaching and reinforcement of sound oral health principle .So they need receive pre-service, in–service, and follow up training to cover health concepts, practice oral hygiene skills and integrate an acceptable oral health educational program into the curriculum [13].

This approach was found to have a benefit in a lot of studies around the world, but unfortunately, such attempt was not tried in our country so the aim of the present study is to estimate the effect of periodontal health educational program administered primary school children through their teachers on the periodontal health status of those children.

Material and methods

Permission was taken from appropriate authorities to conduct this study on eighty eight primary school children. All of them were healthy and of comparable age (6-7years old).They were chosen on a random basis and allocated into two groups (control and experimental). Each group includes

forty four children, 22males & 22 females (table 1). Two clinical examinations had been carried out during the present study the first one carried out before the program conduction and the second examination was done one month after. In both examinations, Silness and Loe Plaque Index (PLI) 1964 and Loe and Silness Gingival Index (GI) 1967 were used to evaluate the periodontal health status of the involved children. These clinical examination were carried out in the classroom under natural day light using of plane mouth dental mirrors and color coded WHO periodontal probes. These instruments were properly sterilized and prepared before each examination .All examinations were conducted by the researcher after being well trained and calibrated. The teachers of the experimental group were involved in an educational program consisting of a single theoretical lecture about etiological symptomatology, progression consequences and possible prevention of periodontal disease and a clinical session about instructions and demonstrations of using of different types of oral hygiene measures. Those teachers were instructed to pass this educational program to the children in the experimental group. Such educational program and instruction of oral health was not provided for the teachers and children in the control group.

The data then collected and statistically analyzed by SPSS program V-15 and represented by a suitable tables shown the means, standard deviation, standard error and the paired test used for determination of the significance.

Results

Results of this research have showed that there is no change in the means of GI scores for the children in the control group for both genders after the program conduction (female from 0.81 to 0.85 and males from 1.1127 to 1.1136). On the other hand an observable reduction in the gingival index means were recorded for both genders in the experimental group (from 0.74 to 0.29 among females and from 0.59 to 0.28 among males) as shown in table 2. These changes were found to be highly significant for both genders after the program when compared with values recorded before conduction of the program, (table 3).

The Results also showed that there is no change in the means of PLI scores for the children in the control group for both genders after the program conduction (female from 0.9136 to 0.9295 and males from 1.11 to 1.1345). And again an observable reduction in the plaque index means were recorded for both genders in the experimental group (from 0.8014 to 0.3709) among females and from 0.73 to 0.38 among males) as shown in table 4. These changes were found to be highly significant for both genders after the program when compared with values recorded before conduction of the program, (table 5).

Discussion

Improving the oral health status through out a group directed periodontal health educational programs can be considered as one of the most applied strategies in field of dental and periodontal disease prevention, because it can be easily reach a large number of population and can gap the progressively enlarged shortage in the required dental man power and financial resources especially in the developing countries [14 – 17]. On the other hand, children have been identified as a special group, which is at great risk of developing

dental and periodontal disease. These two facts call for directing a special protection and provisions toward this age group [18]. In our country, as in other developing countries, teachers can be the primary sources for the dissemination of health education in our schools with the assistance of health professionals in the community. Oral health education in schools needs to involve the efforts of many people, universities and colleges should be charged with the responsibility of preparing qualified school personnel for delivering a proper dental health programs on a permanent basis.

Results of this research clearly reflect the proposed positive effect of the educational program in the lowering plaque and gingival indices scores among the participants in the experimental group. Results of this study also provide another clue that teachers could be targeted in order to enhance the effect of the dental health education campaigns directed to primary school children. In general, the positive effects of educational programs on oral health are thought to be transient over time with obvious benefits observed shortly after. Within the limitations of this research, which include a relatively short duration (one month) and small sample size , the short-term benefits of this educational program to oral health status (reductions in plaque and gingivitis levels) were clearly demonstrated. So the result of this study came in agreement with other study which supported the role of the educational program in promoting improve oral health in the children over a one month period [19].

The results also suggest that public health agencies, private industry educators, researchers and health care providers can successfully aid in the improvement of oral health through education. Establishing good dental habits among children will lay a foundation for further improvements in the nation's oral health status. Research must continue to develop, test, and evaluate new combination of preventive program and to evaluate the effectiveness of any new strategies for community oral health education. dental health education is a powerful tool which has not been consistently applied at the community level .Community programs must use the approaches most likely to succeed against known barrier of receiving dental care and maintaining good oral health. Additional research is required to establish the long-term benefits of this program.

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Table (1) distribution of the population sample

	Control group		Experimental group		Total
Gender	Female	Male	Female	Male	
Number	22	22	22	22	
Total	44		44		88

Table (2).Gingival index scores before and after the program conduction

Group	Variables	Mean difference	t-value	significance
Control	Female before - female after	-0.03773	-0.433	0.670 (NS)
	Male before - male after	-0.00091	-0.018	0.986 (NS)
Experimental	Female before - female after	0.4500	6.493	0.000 (HS)
	Male before - male after	0.30455	4.285	0.000 (HS)

NS= not significant . HS= Highly significant .

Table (3).Paired significant t- test for gingival index before and after the program

Group	Gender	Before			After		
		Mean	Std. dev	Std. err	Mean	Std. dev	Std. err
Control	Female	.8132	.43733	.09324	.8509	.46771	.09972
	Male	1.1127	.44134	.9409	1.1136	.51338	.10945
Experimental	Female	.7405	.44259	.09436	.2905	.22270	.04748
	Male	.5909	.43043	.09177	.2864	.25992	.05541

Table (4) Plaque index scores before and after the program conduction

Group	Gender	Before			After		
		Mean	Std. dev	Std. err	Mean	Std. dev	Std. err
Control	Female	.9136	.42211	.08999	.9295	.37037	.07896
	Male	1.1100	.23845	.05084	1.1345	.37723	.08043
Experimental	Female	.8014	.23445	.04998	.3709	.19309	.04117
	Male	.7391	.34173	.07286	.3814	.22672	.04834

Table (5) Paired significant t- test for plaque index before and after the program

Group	Variables	Mean difference	t-value	significance
Control	Female before - female after	-0.01591	-0.205	0.840 (NS)
	Male before - male after	-0.02455	-0.393	0.698 (NS)
Experimental	Female before - female after	0.43045	9.366	0.000 (HS)
	Male before - male after	0.35773	6.981	0.000 (HS)