

## Effectiveness of dental health education program on periodontal health status of nursery school children in Erbil city

Received: 2/6/2010

Accepted: 24/10/2011

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### Abstract

**Background and Objectives:** Dental health education is a planned package of information, learning activities or experiences that are intended to promote dental health. The current study was conducted to evaluate the impact of dental educational program on cleanliness and gingival health in primary dentition of nursery school children aging (3-6) years in Erbil city.

**Methods:** Oral examination was performed on (148) children of (Balla) nursery school in Erbil city. They were divided into two equal groups, each consisting of (74) children. The first group, an experimental group, received dental health education instructions for 8 weeks before clinically examining the children (the dentist with cooperation from their teachers) twice a week. The second group, control group, whose members examined clinically without any dental educational program. Index used was CPITN.

**Results:** Clinical examination showed that CPITN of group (1) was lower with a healthier gingiva with less plaque accumulation when compared with group (2) with statistical significant differences (P-value <0.005).

**Conclusion:** Dental health education program is an essential activity for promoting optimal oral health and preventing oral diseases. The program displayed positive influence on gingival and oral health behaviors of nursery school children.

**Keywords:** dental plaque, gingivitis, CPITN.

### Introduction

Dental health education can take place in a wide variety of settings: primary care, clinics, schools, preschool education and care, local authority services, commercial organizations, the workplace, community-based initiatives and older people's residential homes.<sup>1</sup> Despite great improvement in the oral health of populations globally, problems still persist, particularly among underprivileged groups, both in developed, and developing countries.<sup>2</sup> Poor oral health may have a profound effect on general health, and several oral diseases are related to chronic diseases.<sup>3,4</sup> The experience of pain, problems with eating, chewing, smiling, and communication due to missing, discolored or damaged teeth have

a major impact on people's daily lives, and well-being. Furthermore, oral diseases can restrict people's activities at school, at work, and at home, causing millions of lost school and work hours each year throughout the world.<sup>5</sup> The causes of dental diseases are known, and the conditions are largely preventable.<sup>6,7</sup> Oral health education affects the individual's oral health literacy that is imperative for better oral health. Oral health literacy emphasizes the availability of skills to obtain, understand and use information for appropriate oral health decisions.<sup>8</sup> The school can provide a supportive environment and an ideal setting for promoting oral health.<sup>9,10</sup>

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Oral health education aims to promote oral health through educational means, principally the provision of information to improve oral health knowledge and awareness for adoption of a healthier lifestyle, changed attitudes, and desirable behaviors.<sup>7</sup> Therefore an efficient dental health care instruction program should be constructed to achieve an acceptable standard of oral hygiene, so dental health education program for those school children is an essential activity for promoting, establishing and maintaining optimal oral health and preventing oral disease. The most efficient way to prevent dental diseases is to control them in childhood. It is especially important to take advantage of the school setting program (School Health Services), in this program it is possible to reach large number of school children at an age can establish a good dental behavior. The most effective education occurs in the face to face situation where there is free inter change of information and where greatest personal involvement in decision making occurs. Verbal communication between dentist and individual is essential in the process of education. However it's not practical to educate each individual separately since it becomes costly and time consuming. Therefore, group instruction could be implemented to educate a large number of individuals at a time. It could be conducted by dentist, a hygienist, a teacher or even by student from upper grade.<sup>2</sup> The aims of the study was to investigate the effectiveness of dental health education program on gingival condition in the primary dentition of nursery school children aging between (3-6) years of age in Erbil city, and to provide an efficient preventative program.

## Methods

This study was conducted at Balla nursery in Erbil city school children during the period between November 2009 to January 2010 on (148) children aged between 3-6 years. The children were divided into two equal groups each consisting of 74 children (31 females and 43 males). Group (1), The

experimental group, received dental health education program regularly, while the other group, was examined clinically without any dental educational program. The intervention was based on exposing children to dental health education through instructions and video clips (DVD) designed for the present study. The same pictures, dental models, and script were used for producing the video clips. Their topics were based on current concepts of recommended oral health prevention.<sup>11,12,13</sup> Educational key messages were the same in both materials: importance of oral health, role of microbial plaque, frequency and methods of proper tooth-brushing and flossing, importance of regular dental attendance and healthy diet. The video clip was a 20-minute film shown in the classroom. It was presented once a day and twice a week. Improvement in oral cleanliness and gingival health lasted 8 weeks before the examination was carried out for the first group. The second group underwent a dental examination while they received no educational intervention at all. Clinical dental examination took place during school hours in class rooms under natural light. A mouth mirror and a WHO probe, cotton role and disinfectant solution were used. The CPI scores were: 0=healthy gums, 1=gingival bleeding, 2=calculus.<sup>14</sup>

Only the presence or absence of gingival bleeding, plaque recorded and periodontal status were recorded separately for each of the six index teeth (16, 11, 26, 36, 31, and 46). Missing index tooth, retained root and or gingival swelling due to carious lesion were excluded<sup>14</sup>. The statistical analysis of the data was carried out by using (SPSS), version was 11.5. This includes:

1. Descriptive statistics (mean, standard error, and percentage).
2. Using S.N.K Multiple Range test and analysis of variance (ANOVA) test.

## Results

According to gingival condition Table (1), the present study demonstrated that children of both group, group (1) (43.2 %) and group (2) (9.4%) had healthy gingiva (score 0). In relation to score (1), (50%) in group (1) and (29.7%) in group (2) were affected by gingival bleeding.

In regards to gingival health, the current study revealed that group (1) had healthier gingiva than group (2) with mean CPITN Scores (0.414) for group (1) and (1.231) for group (2) with statistical significant differences between both groups as shown in Table (2b). Plaque accumulation (score 2) was observed in (9.4%) of group (1) and (62.1%) of group (2). Mean CPITN between educated and non educated groups are shown in Table (2a).

**Table 1:** Percentage of CPITN scores in both groups.

Groups	Score(0)%	Score (1)%	Score (2)%
Group (1)	43.2	50	9.4
Group (2)	9.4	29.7	62.1

**Table 2 (a) :** mean , stander error , stander deviation, minimum and maximum of CPITN between group(1)and group(2).

variables	Groups	No .	Mean	±SE	SD	Min.	Max.
*CPITN	Gp.(1)	74	0.414	0.067	0.580	0.00	2.00
	Gp,(2)	74	1.231	0.073	0.630	0.00	2.00
	Total	148	0.823	0.06	0.730	0.00	2.00

\*CPITN : community periodontal index of treatment need.

**Table 2 (b):** Statistical **analysis** between group (1) and group (2).

	Sum of Squares	df	Mean Square	F	P-value Sig.
Between Groups	24.707	1	24.707	67.232	.000
Within Groups	53.653	146	.367		
Total	78.360	147			

\*P<0.005 there is significant difference of mean CPITN between both groups

## Discussion

Regarding gingival condition as shown in Table (1), the majority of children in group (1) (43.2%) had healthier gingiva than group (2) (9.4%). In relation to gingivitis and bleeding on probing, (50%) of group (1) and (29.7%) of group (2) children were affected by gingival bleeding who needed only motivation for correct tooth brushing practice. Plaque accumulations for group (1) were (9.4%) and in group (2) were (62.1%) who needed scaling and polishing with motivation. The result of the present study is in contrast to the results that reported by (Salman FD, et al)<sup>15</sup> in which the majority of children in both group (1) (54%) and group (2) (51.9%) had healthy gingival (score 0). In relation to score (1), (23.5%) in group (1) and (25%) in group (2) were affected by gingival bleeding. Plaque accumulation (score 2) was observed in group (1) and (23.1%) in group (2). This may be due to insufficient required period between the program and clinical examination in order to achieve the desired effect. This study is similar to another study by (Liana Bastos, et al)<sup>16</sup> in which they found that preventive tooth deriding methods, result in successful plaque control and decreases the incidence of gingivitis in schoolchildren. According to gingival health in (Table 2a,b), the current study showed that group (1) had more gingival health and lower mean of CPITN than group (2). This is attributed to long period of education and encouragement by their teachers and parents. This result is in agreement with the study<sup>17</sup> in which they found that the bleeding scores were significantly lower in experimental schools (educated) than those of control group (non educated). While, (Salman FD, et al)<sup>15</sup> found a lower mean CPITN for educated group (0.67) than non educated group (0.71) with no statistical significant deference of CPITN between them in nursery school children.

To be effective in improving gingival health among school children, it is necessary to do long-term field trials with repeated

efforts and measures.<sup>18</sup> The design of this type of intervention must be adjusted to the oral disease level in the target population and to the relative efficacy of different preventive programs.<sup>19</sup>

## Conclusion

The program had positive effects on reducing gingival bleeding and oral health status of nursery school children. Dental health education program for those children is an essential activity for promoting, establishing and maintaining timely oral health and preventing oral diseases.

## References

1. Overton Dickinson A. and Mason J. Community oral health education concept in dental public health. Philadelphia: Lippincott Williams and Wilkins, 2005; pp: 139-157
2. Petersen PE. The World Oral Health Report. continuous improvement of oral health in the 21st century – the approach of the WHO Global Oral Health Programme. Community Dent Oral Epidemiol 2003; 31(Suppl. 1): 3-24.
3. Ylöstalo PV, Järvelin MR, Laitinen J, Knuuttila ML. Gingivitis, dental caries and tooth loss: risk factors for cardiovascular diseases or indicator of elevated health risks. J Periodontol 2006; 33: 92-101.
4. Bazile A, Bissada NF, Nair R, Siegel B. Periodontal assessment of patients undergoing angioplasty for treatment of coronary artery disease. J Periodontol 2002; 73: 631-636.
5. Petersen PE, Bourgeois D, Ogawa H, Estupinan-Day S, Ndiaye C. The global burden of oral diseases and risks to oral health. Bull World Health Organ 2005; 83: 661-669.
6. Fejerskov O, Kidd E. Dental caries, the disease and its clinical management. London: Blackwell Munksgaard, 2003; pp: 165-245.
7. Murray JJ, Nunn JH, Steele JG. Prevention of oral disease. 4th ed. Oxford: Oxford University press 2003; pp: 7-34, 77-95, 123-144, 241-258.
8. H orowitz AM, Kleinman DV. Oral health literacy: The new imperative to better oral health. Dent Clin N Am 2008; 52: 333-344.
9. World Health Organization (WHO). WHO information series on school health. Documente 2003b. WHO/NMH/NPH/ORH School/03.3.
10. Pine CM. Designing school programmes to be effective vehicles for changing oral hygiene behavior. Int Dent J 2007; 57: 377-381.
11. Chapman A, Copestake SJ, Duncan K. An oral health education programme based on the

- 
- National Curriculum. *Int J Paediatr Dent* 2006; 16: 40-44.
12. Daly B, Watt R, Batchelor P, Treasure E. *Essential Dental Public Health*. Oxford: Oxford University Press 2005; pp: 133-152.
  13. Petersen, PE. Challenges to improvement of oral health in the 21st century – the approach of the WHO Global Oral Health Programme. *Int Dent J* 2004; 54: 329-343.
  14. WHO . *Oral Health Surveys – Basic Methods*. 4th Ed. Geneva: World Health Organization. 1997.
  15. Salman FD ,Sami SG,Qasm AA: the effectiveness of dental health education program on oral health status among nursery school children .2008 ;80-89
  16. Liana Bastos ,Arthur Belem ,Alfredo Carlos : Effectiveness of an Oral Hygiene Program for Brazilian Orphans. *Braz Dent J* 2002; 13(1): 44-48.
  17. Petersen, PE ,Bing Peng, Boejon Tai, Zhuan Bian and Mingwen Fan:effect of school based oral health education program in Wuhan city, people Republic of Chin *International dental J* 2004;54 ,33-41.
  18. Dini EL. Changes in periodontal conditions of children and adolescents from Araraquara, Brazil: 1995-1998; *Braz Dent J* 2001;12:51-55.
  19. Freire MC, Sheiham A, Hardy R. Adolescents' sense of coherence,oral health status, and oral health relate behaviors. *Community Dent Oral Epidemiology* 2001;29:204-212.