http://dx.doi.org/10.5272/jimab.2014205.664

Journal of IMAB
ISSN: 1312-773X
http://www.journal-imab-bg.org

OPEN ACCESS

Journal of IMAB - *Annual Proceeding (Scientific Papers)* 2014, vol. 20, issue 5

ASSESSMENT OF ORAL HYGIENE HABITS IN CHILDREN 6 TO 12 YEARS

Liliya Doichinova, Nadezhda Mitova
Department of Pediatric Dentistry, Faculty of Dental Medicine, Medical University - Sofia, Bulgaria.

ABSTRACT

INTRODUCTION: Oral hygiene is an essential element of health education programs for schoolchildren.

AIM: The study aims to assess the skills when conducting oral hygiene of a group of schoolchildren and to conduct training in its rules.

MATERIAL AND METHODS: The study covers 30 children aged 6-12 years. The training was conducted by the methods of the visual pedagogy and implementation of the technique "Say, show, do". The assessment of the oral-hygiene status was held by the simplified oral hygiene index-Greene & Vermillion.

RESULTS AND CONCLUSION: The children do not have proper oral hygiene habits. The daily oral care is inadequate. The number of cleaned tooth surfaces during oral hygiene practice is small. Children have no developed proper oral hygiene skills, and brush only the vestibular surfaces of the teeth (80%), 13.3% the vestibular and the occlusal, and 6.7% only cover lingual surfaces too. The unsatisfactory oral hygiene status is also a result of using only one type of toothbrush movements.

The improvement of children's health knowledge should play key role in correcting their oral hygiene technique.

Key words: Children, dental plaque, oral hygiene, tooth brushing techniques.

INTRODUCTION

Oral hygiene is the golden standard for good oral health maintenance [1, 2]. The oral hygiene care procedures are major component in students' health educational programs and incorporate a complex of activities, targeted to reduce and limit dental plaque accumulation [2, 3, 4, 5, 6]. The plaque accumulation control aims at limiting and preventing the development of dental caries.

AIM AND OBJECTIVES:

The study aims at assessing the oral hygiene skills of a group of students and correcting the existing oral hygiene habits among them by conducting education on oral hygiene procedures and assessing its effectiveness. In order to achieve the outlined goal we formulated the following specific objectives: to conduct a preliminary assessment of the oral hygiene status of the children and their oral hygiene skills; to assess their baseline oral hygiene skills; to make correction of the existing oral hygiene practice using motivation and education in oral hygiene procedures; to monitor both oral hygiene and the improvement of tooth brushing with toothpaste after the completed education and motivation within three months.

MATERIALS AND METHODS:

The study included 30 children age 6 to 12 years. The baseline oral hygiene status of children was assessed using the simplified oral hygiene index of Greene& Vermillion (Simplified – 1964).

The duration of the study was three months, adjusting the existing oral hygiene skills by educating the children in oral hygiene procedures with the help of a motivational program. It was conducted under a standard schedule by introducing various elements and changing their place in each re-motivation to avoid the process of saturation: Dental plaque visualization using staining tablets and explaining the scores obtained; its demonstration by scraping the plaque, focusing on its impact on dental health, esthetics and social contacts; Use of a plastic dummy model to demonstrate the properly combined dentition brushing movements accompanied by showing the section, which are more difficult to reach and the way to clean them by using the technique „Tell, show, do"; Demonstration of good oral hygiene in a child, who may serve as an example; Showing motivational slides, as well as cartoons focusing on health education.

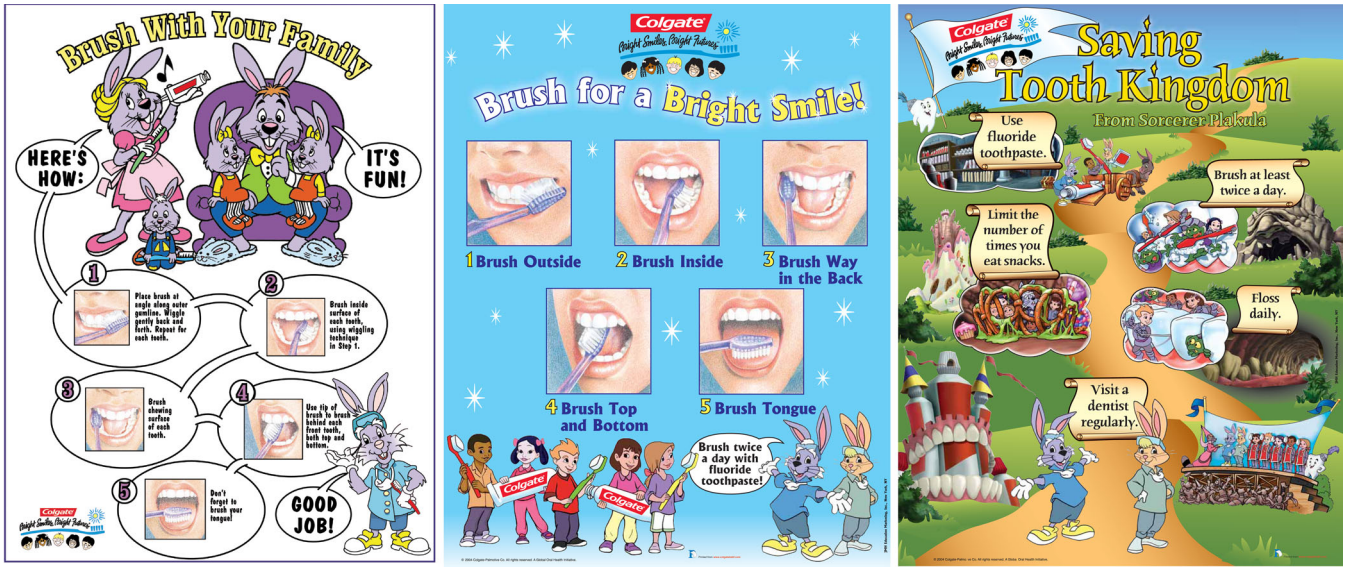

Fig. 1. Motivational Materials

The duration of the program was 15 minutes, out of which 12 minutes were focused on motivation, demonstration and education and 3 minutes were dedicated to oral hygiene practice following the instructions. After the first visit for oral hygiene status assessment, visits were planned in two consecutive weeks for correcting the existing hygiene habits of the children in this study. Each month there was an evaluation of the progress made. In the process of education and motivation re-motivational interval every two weeks were applied.

RESULTS:

At the beginning of the study baseline assessment of the oral hygiene status of the children, as well as their oral hygiene habits and practice was performed.

Fig. 2. Oral hygiene habits in children from 6 to 12 years.

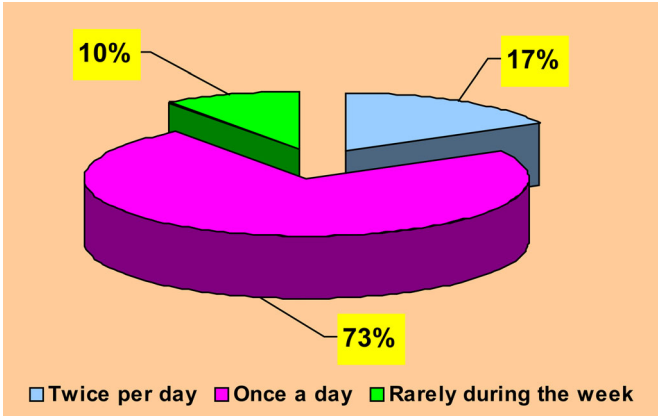

Figure 2 shows the oral hygiene habits of the studied children. It was clear to notice that the prevailing part of the children had their oral hygiene care once daily. The rest of them brushed their teeth twice daily and the share of children who brushed their teeth rarely during the week was small. This result explains their poor oral hygiene, which means that for them it is necessary to develop their habit to brush their teeth in the morning and in the evening.

Fig. 3. Oral hygiene regimen - in the morning for children.

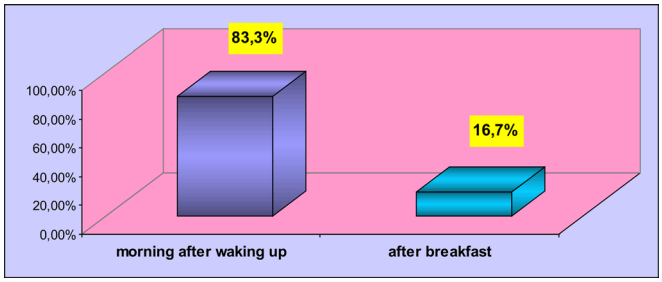

Figure 3 reveals that the majority of children brush their teeth in the morning after waking up and a small share of them does this after they have their breakfast. These results necessitate efforts to be incurred for improvement of their knowledge on oral hygiene and the impact of dental plaque on the development of dental caries and periodontal diseases.

Fig. 4. Duration of oral hygiene in children.

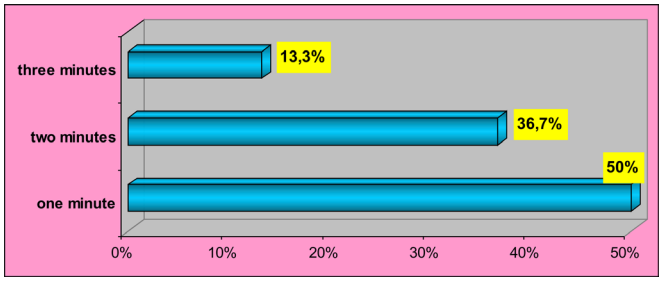

Figure 4 shows the duration of oral hygiene care, performed by these children. Just a small share of them brushed their teeth for three minutes. Half of the group had their oral hygiene just for one minute, the rest of them dedicated to oral hygiene two minutes. It is evident that the insufficient time

cannot ensure good quality of plaque bio-film removal in the majority of children. During education it is necessary to focus on the time needed for oral hygiene improvement.

Fig. 5. Movements of the toothbrush in oral hygiene, used in children

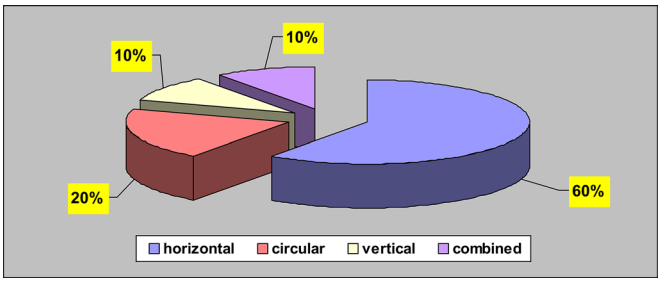

Figure 5 illustrates the most frequently used toothbrush movements in tooth brushing, namely the horizontal movements, which are not sufficient to provide good quality of teeth cleaning. Next were the circular movements, also preferred by the children. The vertical and combined movements were used by an equal part of the children. It is necessary to build up relevant knowledge on plaque bio-film and the necessity of combining of various types of movements in oral hygiene care.

Table 1. Assessment of studied dental surfaces in oral hygiene.

Surfaces	Girls n=12		Boys n=18	
	Before	After	Before	After
Vestibular	10 (83.3%)	12 (100%)	14 (77%)	18 (100%)
χ^2	χ^2=2.18 p>0.05		χ^2=4.5 p<0.05	
Occlusal	3 (25%)	12 (100%)	1 (5.5%)	16 (88.9%)
χ^2	χ^2=14.4 p<0.001		χ^2=12.2 p<0.001	
Lingual	2 (16.7%)	9 (75%)	0%	15 (83.3%)
χ^2	χ^2=5.6 p<0.05		χ^2=0	

Table 2. Oral Hygiene Status of children 6-12 years of age.

	1 baseline status	*2 After 1 week*	*3 After 2 weeks*	*4 After1 month*	*5 After 2 months*	*6 After 3 months*
x	2.03	1.96	1.90	1.52	1.31	1.12
SD	0.43	0.39	0.36	0.54	0.48	0.41
n	30	30	30	30	30	30
T, p		T1,2=0.60 p>0.05	T1,3= 2.2 p<0.05	T1,4=4.0 p>0.001	T1,5= 5.41 p<0.001	T1,6=7.70 p<0.001

Table 1 illustrate the achieved oral hygiene results on studied dental surfaces during the reported period. At the beginning in assessing the baseline oral hygiene status it was found that the children didn't have well-established proper oral hygiene skills and brush only the vestibular surface of their teeth (80%), 13.3% - occlusal surface and only 6.7% include also the lingual surfaces. Extremely troublesome is the fact that only few of the children brush their occlusal tooth surfaces, and the age group of 6-7 years has the highest risk of developing occlusal caries on their first permanent molars.

Upon program completion the conducted assessment of children's skills in brushing their teeth with a toothbrush and tooth paste revealed that 100% of them brush the vestibular surfaces of their teeth, 93.3% include also the occlusal and 80% - the lingual surfaces. Statistical credibility of the results, obtained before and after the oral hygiene program was reported for both boys and girls for the vestibular surfaces. As to the occlusal and lingual surfaces, such results were established only with girls. The assessment of the studied dental segments revealed, that 60% of the children brushed the vestibular surfaces of mandibular and maxillary incisors and canines at the beginning and 100% - at the end of the program; 16.7% - the vestibular surfaces of maxillary molars and premolars at the beginning and 100% at the end, and for the same mandibular segment the figures were only 3.3% at the beginning and 100% at the end of the program. The occlusal surface brushing at the beginning was 13.3% reaching 93.3% at the end. The lingual surfaces of both maxillary and mandibular frontal teeth were brushed by only 3.3% at the beginning and at the end - 83.3% for the maxillary and 60% for the mandibular frontal teeth respectively.At the beginning of the program none of the children brushed the

lingual surfaces of their maxillary or mandibular molars and premolars, while at its end respectively 80% and 50% of them started taking oral care of these maxillary and mandibular dentition segments.

Table 2 illustrate that at the beginning the children had unsatisfactory baseline level of oral hygiene. After conducting motivation and education on its procedures gradual oral hygiene improvement was observed. During the first two weeks there was some reduction of OHI values, without any statistically significant difference to baseline level. Such statistically significant difference, though quite weak, was reported only at the end of the first month ($T_{1,3}=2.2$ $p<0.05$). At the end of the third month change in the oral hygiene status of these children was visible, credible difference of high statistical significance was established, compared to its baseline level ($T_{1,6}=7.70$ $p<0.001$), as a result of the completed motivational program and education.

DISCUSSION

Oral hygiene is the gold standard for maintaining good oral health [1, 4]. The present study showed that the children haven't established correct oral hygiene habits. It was found that the frequency of oral care of them for the day is insufficient. It combined with poor cleaning of all teeth and insufficient number of covered tooth surfaces, and using only one type of toothbrush's movements' ultimately resulting unsatisfactory level of oral hygiene status in these children. This need to be working to obtain a good knowledge of children about oral health with the implementation of a program for motivation and training in the rules of oral hygiene, which is the basis for the good level. The rules for the oral hygiene care is an essential component in health training programs for students and includes a complex of activities that are intended to limit and reduce the accumulation of dental plaque [2, 6, 7].

Visualization of the dental plaque is an important element in the motivation and training of oral hygiene [5]. The control of its accumulation is intended to restrict and prevent the development of dental caries [3, 4, 8, 9, 10, 11, 12]. The oral health is associated with the knowledge, the motivation and the level of oral hygiene for any individual [2, 3, 5, 13, 14]. It reduces the risk of developing dental caries. The oral hygiene care is the most effective way of preventing it [1, 9, 12, 15, 16].

A statistically significant improvement in oral hygiene shows that in childhood is necessary continuous motivation and remotivation, in order to maintain good oral hygiene. The results are indicative that after the performed motivation and training in the rules of oral hygiene has increased the number of cleaned surfaces in each child included in the study.

Oral health education and training were effective in establishing good oral health habits among school children and also in enhancing the knowledge of their parents about good oral health [17, 18].

The school-based caries preventive program comprised oral hygiene instructions and supervised toothbrushing education was effective in imparting oral health knowledge and establishing good oral hygiene habits in school children and in improving their oral hygiene status and the attitudes of their parents [17, 19].

CONCLUSION:

The children do not have proper oral hygiene habits. The daily oral care is inadequate. The number of cleaned tooth surfaces during oral hygiene practice is small. The unsatisfactory oral hygiene status is also a result of using only one type of toothbrush movements. The improvement of children's health knowledge should play key role in correcting their oral hygiene technique.

REFERENCES:

1. Anaise JZ. The toothbrush in plaque removal. *ASDC J Dent Child.* 1975 May-Jun 42(3): 186-189. [PubMed]

2. Blinkhorn AS, Gratrix D, Holloway PJ, Wainwright-Stringer YM, Ward SJ, Worthington HV. A cluster randomised, controlled trial of the value of dental health educators in general dental practice. *Br Dent J.* 2003 Oct 11; 195(7): 395-400. [PubMed]

3. Freitas-Fernandes LB, Novaes AB Jr, Feitosa AC, Novaes AB. Effectiveness of an oral hygiene program for Brazilian orphans. *Braz Dent J.* 2002; 13(1): 44-48. [PubMed]

4. García-Godoy F, Marcushamer M, Cugini M, Warren PR. The safety and efficacy of a children's power toothbrush and a manual toothbrush in 6-11 year-olds. *Am J Dent.* 2001 Aug; 14(4):195-199. [PubMed]

5. Greene JC, Vermillion JR. The oral hygiene index: a method for classifying oral hygiene status. *J Amer Dent Ass.* 1960; 61:29-35.

6. Thomas S, Tandon S, Nair S. Effect of dental health education on the oral health status of a rural child population by involving target groups. *J Indian Soc Pedod Prev Dent.* 2000 Sep, 18(3):115-125. [PubMed]

7. McClure DB. A comparison of toothbrushing techniques for the preschool child. *J Dent for Child.* 1966 May; 33(3): 205-210.

8. Nourallah AW, Splieth CH. Efficacy of occlusal plaque removal in erupting molars: a comparison of an electric toothbrush and the cross-toothbrushing technique. *Car Res.* 2004 Mar-Apr;38(2): 91- 94. [PubMed] [CrossRef]

9. O'Leary TJ, Drake RB, Naylor JE. The plaque control record. *J Periodontol.* 1972 Jan; 43(1):38. [PubMed] [CrossRef]

10. World Health Organ Tech Rep Ser. Prevention methods and programmes for oral diseases. Report of a WHO Expert Committee Geneva, 1984; 713: 1-46.

11. Rugg-Gunn AJ, Macgregor ID. A survey of toothbrushing behaviour in children and young adults. *J Periodontal Res.* 1978 Aug; 13(4): 382-389. Published online: 30 Jun 2006

[CrossRef]

12. van Palenstein Helderman WH, Kyaing MM, Aung MT, Soe W, Rosema NA, van der Weijden GA, et al. Plaque removal by young children using old and new toothbrushes. *J Dent Res*. 2006 Dec; 85(12): 1138-1142. [PubMed] [CrossRef]

13. Ogasawara T, Watanabe T, Kasahara H. Readiness for toothbrushing of young children. *ASDC J Dent Child.* 1992 Sep-Oct;59(5): 353-359. [PubMed]

14. WHO offset Publication No 103, Prevention of Oral Diseases. WHO Geneva 1987.

15. Simmons S, Smith, R, Gelbier S. Effect of oral hygiene instruction on brushing skills in preschool children. *Community Dent Oral Epidemiol.* 1983 Aug;11(4):193-198. Published online: 29 May 2006 [CrossRef]

16. Vanobbergen J, Declerck D, Mwalili S, Martens L. The effectiveness of a 6-year oral health education programme for primary schoolchildren. *Community Dent Oral Epidemiol.* 2004 Jun; 32(3):173-182. [PubMed] [CrossRef]

17. Martins CC, Oliveira MJ, Pordeus IA, Paiva SM. Comparison between observed children's tooth brushing habits and those reported by mothers. *BMC Oral Health.* 2011 Sep 3; 11:22. [PubMed] [CrossRef]

18. Turska-Szybka A, Gozdowski D, Olczak-Kowalczyk D. Impact of individual health-oriented parent education on eating and hygienic habits, oral hygiene level, and dentition condition in children with high risk of caries. *Dev Period Med.* 2014; 18(2): 233-40. [PubMed]

19. Pullishery F, Shenoy Panchmal G, Shenoy R. Parental Attitudes and Tooth Brushing Habits in Preschool Children in Mangalore, Karnataka: A Cross-sectional Study. *Int J Clin Pediatr Dent.* 2013 Sep; 6(3):156-60. [PubMed] [CrossRef]

Please cite this article as: Doichinova L, Mitova N. Assessment of oral hygiene habits in children 6 to 12 years. *J of IMAB.* 2014 Oct-Dec;20(5):664-668.
doi: http://dx.doi.org/10.5272/jimab.2014205.664

Received: 27/09/2014; Published online: 04/12/2014

CC BY NC SA

Address for correspondence:
Liliya Doichinova
Department of Pediatric Dentistry
Faculty of Dental Medicine, Medical University – Sofia
1, St. Georgi Sofiiski boul., 1431 Sofia, Bulgaria
e-mail: ldoitchinova@abv.bg