

Study on improving oral hygiene in a group of 12-year-old children after a toothbrushing training programme

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Summary

Toothbrushing is the most widespread mechanical means of personal plaque control. Unfortunately, removal plaque from all tooth surfaces is a difficult and time-consuming activity, and relatively few people, especially children, are sufficiently motivated and instructed to effectively clean their teeth [4, 5]. For this reason the *aim* of this study is the evaluation of oral hygiene in a group of 23 children aged between 12 and 13 years, before and after their instruction in a professional training programme on toothbrushing.

The level of oral hygiene was appreciated by the API (Approximal Plaque Index), after disclosure of the dental plaque by using erythrosine tablets [2]. The training programme included information concerning the importance of tooth cleaning and instruction in Bass toothbrushing technique. After instruction sessions, held weekly for four weeks, the final examination was done three months from the end of this period.

The *results* show that the API index decreased from 59.05 percent at baseline to 37.82 in the final examination.

As a *conclusion* we can say that self-diagnosis and a more efficient motivation of oral hygiene given by a well-conducted professional training programme may improve the quality of plaque control, with many benefits for the individual oral health.

Materials and method

Study conditions were explained to children and their parents, and after parental consent had been granted, to the school personnel (*figure 1*).



Figure 1. Subjects of study

After this first meeting, the parents and teachers of the children received an 1-hour oral presentation on the etiology and prevention of dental disease. Information concerning the importance of tooth cleaning was also given and parental support was requested (*figure 2*).



Figure 2. Oral education hour

The participants' oral health status was assessed clinically at baseline by using erythro-sine, determining the API (Approximal Plaque Index) oral hygiene index (figure 3). Only the presence (with 1) or the absence (with 0) of plaque were noted.

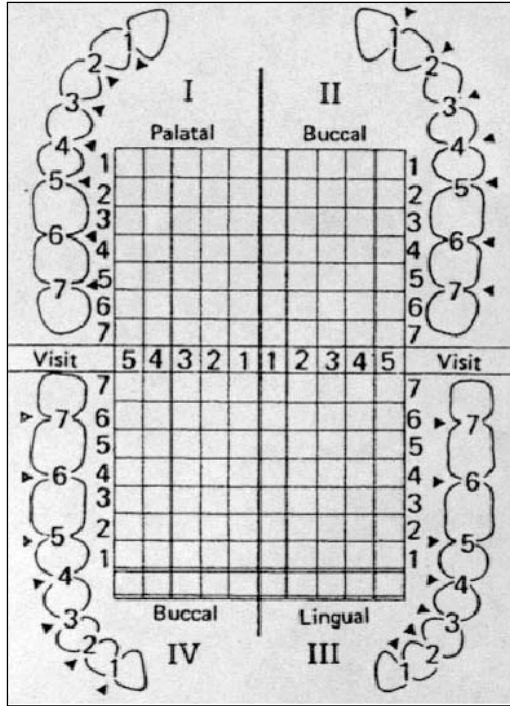


Figure 3. The API Index assessing form

Oral hygiene is appreciated as follows:

- API = 0% - perfect hygiene
- API < 30% - appropriate hygiene

API = 30-70% - mediocre hygiene

API = 70-100% - inappropriate hygiene [3].

The subjects of this study have special individual charts (figures 4 and 5).

The toothbrushing training sessions were done after the self-diagnosis of plaque and API, after disclosure by erythrosine, followed by oral hygiene instruction and supervised training according to the individual distribution of plaque and dental disease, and self-identification of the key-risk teeth and surfaces.

Subjects' active participation in self-diagnosis was stimulated.

By using the API index the subjects could comprehend how frequently they need to clean their teeth, and which sites would require special attention. The children were instructed in Bass technique, first in group (figures 6 and 7), then individual (figures 8, 9, 10, 11, 12).

Materials used in the study are presented in figure 13.

While a student was examining, another one was filling in the individual charts (figure 14).

Next photos present a few of the examined subjects, after disclosing the plaque (figures 15, 16, 17, 18).

Participants were told to clean their teeth at least twice a day. Disclosing tablets should be used every day during the first week and afterwards each Sunday, always after cleaning. Children were advised to check for and remove any remaining visible plaque.

FIȘĂ INDICE IGIENĂ API (Approximal Plaque Index)													
CLASA A VI-A B													
DIRIGINTE: PROF. MIHAI PĂRVU													
ELEV:.....													
o	o	o	o	o	o	o	v	v	v	v	v	v	v
7	6	5	4	3	2	1	1	2	3	4	5	6	7
v	v	v	v	v	v	v	o	o	o	o	o	o	o
A II-a EXAMINARE													
o	o	o	o	o	o	o	v	v	v	v	v	v	v
7	6	5	4	3	2	1	1	2	3	4	5	6	7
v	v	v	v	v	v	v	o	o	o	o	o	o	o

Figure 4. Individual chart used in the study

FIȘĂ INDICE IGIENĂ API (Approximal Plaque Index)
 CLASA A VI-A B
 DIRIGINTE: PROF. MIHAI PĂRVU
 ELEV... *Olteanu Ioana*.....

0	0	0	0	0	0	0	v	v	v	v	v	v	v
+	+	+	-	-	-	-	+	+	+	+	+	+	
7	6	5	4	3	2	1	1	2	3	4	5	6	7
v	v	v	v	v	v	v	o	o	o	o	o	o	o

A II-a EXAMINARE

0	0	0	0	0	0	0	v	v	v	v	v	v	v
-	-	-	-	-	-	-	-	-	-	+	+	-	
7	6	5	4	3	2	1	1	2	3	4	5	6	7
v	v	v	v	v	v	v	o	o	o	o	o	o	o

Figure 5. Individual chart of a subject



Figure 6. Instructing the group



Figure 7. Instructing the group



Figure 8.



Figure 9.



Figure 10.



Figure 11.



Figure 12.



Figure 13.



Figure 14. Filling in the individual charts



Figure 15.



Figure 16.



Figure 17.



Figure 18.

One hour follow-up session was given weekly for four weeks, and the assessing of the results was done after three months. During the recall visits the participants' difficulties in achieving effective plaque control was checked, and their knowledge in Bass technique evaluated.

Results

The individual results for API index for the first and the second examination are presented in the *Table 1*.

Table 1. Individual values for API index

No.	API index at first examination	API index at second examination
1.	62.50%	29.16%
2.	50%	37.5%
3.	37.5%	41.6%
4.	87.5%	75%
5.	50%	25%
6.	20.83%	16.66%
7.	58.33%	45.83%
8.	62.5%	4.16%
9.	50%	20.8%
10.	66.6%	54.16%
11.	100%	58.3%
12.	50%	70.8%
13.	62.5%	45.83%
14.	87.5%	62.5%
15.	54.16%	41.66%
16.	75%	20.83%
17.	75%	83.3%
18.	20.83%	29.16%
19.	41.66%	50%
20.	33.33%	16.66%
21.	62.5%	79.16%
22.	79.16%	79.16%
23.	70.83%	62.5%

The average value for API index in the first and second examination are presented in *Table 2*.

Table 2

The average value for API index after first examination	The average value for API index after second examination
59.05%	37.82%

The results show that the API index decreased from 59.05% at baseline to 37.82% at the final examination.

Discussions

We consider that the reduction of the average of API index by 21.23% is a favourable result in our study.

If the first examination value was 59.05% which means mediocre hygiene, the second

examination value of 37.82% is closer to appropriate hygiene.

We consider that this result is firstly due to our training programme, using toothbrushing Bass technique, and second of all to other educational and motivating factors involved in this study, such as:

- oral education hours;
- information about the etiology and prevention of dental disease;
- information concerning the importance of tooth cleaning [1].

A closer look on the results shows that:

- in 16 of 23 subjects (69.56%) we obtained an improvement of API index;
- in 6 subjects (26.08%) the second examination index was higher than the first one, but the oral hygiene had the same value;
- in one subject the value of the index was the same at the first and second examination.

Concerning the oral hygiene value, the results show that:

- in 6 of 23 subjects (26.08%) the hygiene value at the first examination was 30-70%, and at the second examination was below 30%;
- in 2 subjects (8.7%) we found an improvement of the oral hygiene from 70-100% to 30-70%;
- in one subject (4.34%) we found first an inappropriate hygiene (70-100%), and then an appropriate hygiene;
- 14 subjects (60.89%) had the same value of oral hygiene, but a lower value of API index.

Conclusions

1. Conventional toothbrushing made by inaccurate criteria does not allow an efficient control of plaque, especially in key-risk teeth and surfaces.

2. Establishing the right custom for toothbrushing of all dental surfaces has good results in reducing the risk of decay in children.

3. Self-diagnosis and a more efficient motivation of oral hygiene given by a well-conducted professional training programme may improve the quality of plaque control, with benefits on the individual oral health.

References

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