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CLINICAL STUDY

Tooth-brushing intervention programme among children with mental handicap

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Abstract: *Aim and methods:* For realizing our study the supervised tooth-brushing program was carried out among 100 schoolchildren at the age of 9–12 and 13–16 years with low and moderate mental handicap in Skopje. To evaluate the results of six months intervention program, concentrated on encouragement of independent manual skills, OHI levels were detected by Green-Vermillion and CPITN index levels to characterize the gingival and periodontal health.
Results: For comparative analyzes of date-base OHI levels and after six months of intervention program, we detected that the mean date-base OHI index level for mentally handicaped children are 2.46, and at the end of the program (after six months) it was 0.73. CPITN index levels at the beginning and after six months of intervention programmed for mentally handicaped children in both age groups, also confirmed r statistical significance for this examined parameter, with evident reduction of CPITN mean levels from 2.11 to 0.95.
Correlation among date-base OHI levels and levels at the end of our intervention program means high positive correlation between these index levels at the beginningand final examinations.
Conclusion: This program gave promising results and was effective in reducing the plaque and gingivitis scores, so the key to long-term success of the program is to maintain the subjects' motivation to make oral hygiene a part of their daily routine and thus sustain this improvement *(Tab. 1, Fig. 4, Ref. 12).* Full Text (Free, PDF) *www.bmj.sk.*
Key words: oral health, tooth brushing program, mental handicap.

Generally the term handicap means: incapability, disability, difficulty.

American Public Health Association defines a handicapped child as a child who is limited to play, work or do things that other children of his age can do: it is a child that cannot achieve his full physical, mental and social potentialities (1).

Mental retardation can be defined as an effectual theoretical intelligence, which is congenital or acquired early in life.

The American Academy of Mental Deficiency (2) classified retardation in four categories according to their intelligence quotient as: mild, moderate, severe or profound retardation.

Oral hygiene and periodontal disease represent a major problem for the disabled. Children with mental handicap tend to have poor standards of oral hygiene and plaque control that results in gingivitis and greater prevalence and severity of periodontal disease than normal children (3). The majority of studies agree that children who are disabled are in far greater need of treatment than normal children. The lack of motivation, low concentration make it difficult to achieve and maintain a high standard of oral hygiene and gingival health (4, 5, 6). A lot of them cannot perform the necessary techniques for plaque removing, and oral hygiene for these individuals generally becomes the responsibility of another person, usually a parent, guardian or institutional caregivers.

The first choice for control of bacterial plaque is mechanical. Some studies (7) of persons with disabilities have shown that it was possible to produce statistically significant reductions in plaque and gingival index through mechanical control of plaque. Tooth brushing is the principal method used for maintaining oral hygiene and its appropriate frequency is the most important and effective way of reducing levels of plaque and gingivitis. Education and implementation of oral health practices are especially important in prevention of periodontal disease (8).

The aim of the study was: to examine if oral hygiene can be improved in a group of mentally handicapped schoolchildren by supervised tooth-brushing program of oral health education and to develop a daily tooth brushing routine.

Material and method

For the realization of our study the supervised tooth-brushing program was carried out among 100 schoolchildren at the age of 9–12 and 13–16 years with low and moderate mental handicap in Skopje.

To evaluate the results of a six months intervention program, concentrated on encouragement of independent manual skills,

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Tab. 1. Distribution of examine group of mental handicapped schoolchildren in relation with age and sex.

	AGE	MALE	FEMALE	TOTAL
Mental handicapped children	9–12 years	27	13	40
	13–16 years	35	25	60

OHI levels were detected by Green-Vermillion and CPITN index levels to characterize the gingival and periodontal health.

Individual instruction and assistance in brushing and demonstrations on tooth brushing technique were arranged among the subjects and the teachers who supervised the brushing, two times a day at school. The dental team visited the school twice a week, offering encouragement and support to the staff, and where necessary, demonstrating tooth brushing technique.

At the end of six months, the program was evaluated and the subjects were re-examined for clinical scoring.

Results

Table 1 shows the distribution of the examined group of mentally handicapped schoolchildren in relation with age and sex. The group of 9–12 years old mentally handicapped children consisted of 27 male and 13 female' children, the group of 13–16 years old consisted of 35 maleand 25 female children.

From Figure 1 which shows comparative analyzes of date-base OHI levels and after six months of intervention program, we detected that the mean date-base OHI index level for mentally handicapped children is 2.46, and at the end of the program (after six months) it is 0.73. Our results confirmed statistical significance for this clinical parameter ($p<0.01$)

Figure 2 shows the CPITN index levels at the beginning and after six months of intervention program for mentally handicapped children in both age groups and also confirms statistical significance for this examined parameter, with evident reduction of CPITN mean levels from 2.11 to 0.95 ($p<0.01$).

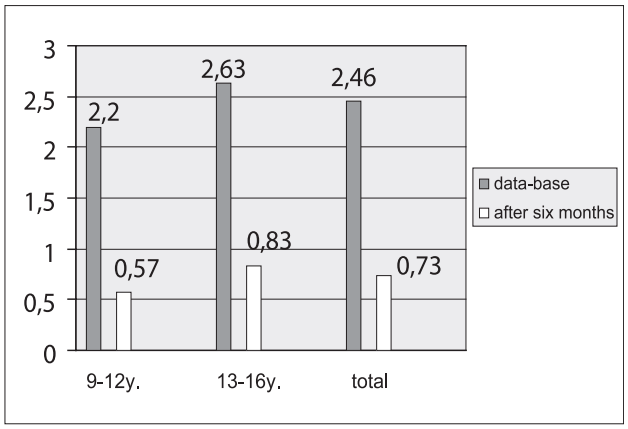

Fig. 1. Comparative analyzes of data-base OHI levels and OHI levels after six months of intervention programme.

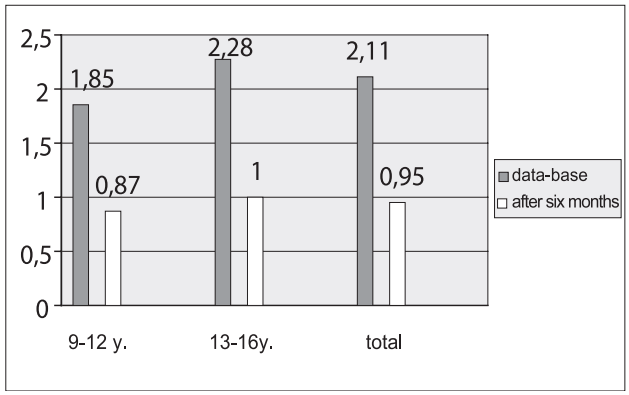

Fig. 2. CPITN index levels at the beginning and after six months of intervention programme.

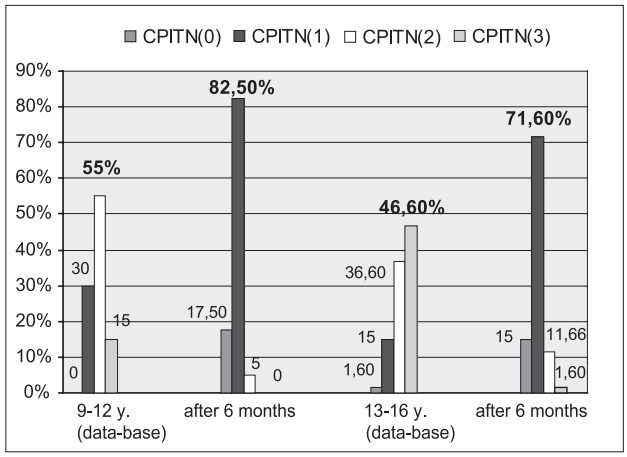

Fig. 3. CPITN levels at the beginning and after six months of intervention programme (percentage distribution).

Percentage distribution of CPITN levels at the beginning and after the endof our study is shown on Figure 3. It illustrated that 55 % of children between 9–12 years of age have CPITN level 2 at the beginning, and CPITN level 1 with percentage of 82.5 for only six months. In children between 13–16 years of age base line CPITN index was 3 with percentage of 46.6 %, and at the end they are also CPITN 1 with percentage of 71.6 %. The results are highly statistically significant ($p<0.01$).

The results of correlation among date-base OHI levels and levels at the end of our intervention program showed in Figure 4 mean high positive correlation between these index levels at the beginning and final examinations ($r=0.59$).

Disscussion

The lack of proper oral hygiene is the principal cause of periodontal disease in individuals with handicapping condition and primary factor influencing the prevalence of disease in this population. The aim of our study was to examine if oral hygiene can

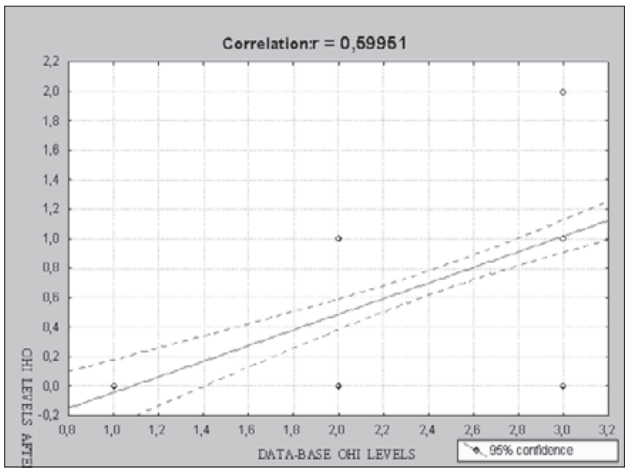

Fig. 4. Correlation among data-base OHI levels and OHI levels after six months of intervention programme.

be improved in children with mental handic and to develop a daily tooth brushing routine. The tooth brushing program concentrated on encouragement of independent manual skills. Adeguate oral cleaning is in most individuals heavily dependent on effective brushing (9). Brushing is a voluntary physical activity, and has two requirements: motivation and physical (manual) ability. Motivation, in turn, has two requirements: understanding of what is needed and of the reasons and benefits, and a desire to achieve those benefits. Educational research shows that simple incentives and reinforcement by professionals encourage young children to change their behavior and maintain the change (4). Some retarded children are mentally incapable of understanding oral hygiene procedures, while others can understand them only with frequent reinforcement. Mental handicapped school children can accept the changes of their oral health habits, only with motivation and re-motivation.

Tooth brushing can be thought in the same way as other skills, but it requires time for the individual as well as commitment on the part of the regular caregiver to ensure that all areas of the mouth are being cleaned each time. Toothbrushing often is not supervised or encouraged, and consequently, oral hygiene is poor, resulting in build up of plaque (10). In our study no chemical intervention was used and active involment of subjects was emphasized because a positive change in attitude toward proper oral hygiene habits was targeted. It would also have been more difficult for teachers to accept chemical interventions. There was some absenteeism in children in very small numbers during tooth brushing program. Thought it is essential that the parents be involved and motivated for the achievement of long-term benefits, parental participation was not possible since quite many of the children did not have parents (11). In addition no control group was used in this study for ethical reasons, because the baseline assessment showed high need for improvement in oral hygiene among all subjects in this school. The difference in the results for examined clinical parameters (OHI and CPITN) in our study after treatment during an intervention program demonstrate that number of sites affected by gingivitis and plaque was reduced markedly. OHI index values also estimated for high association between dental plaque and gingival inflammation, at the beginning and at the end of the study with continuous reduction of this levels.

Over the long term, tooth brushing is cost-effective; as it reduced number of visits of dental team and is also likely to reduce the need for dental treatment. This tooth brushing study has showed that such program gives promising results, but dramatic improvement has to be sustained. When assessed over a period of years, regular daily tooth brushing in patients with mental retardation leads to long-term improvements in oral health (12).

Conclusions

The removal of dental plaque by tooth brushing the teeth significantly reduced the level of gingival inflammation which confirmed the fact that children with mental handicap can be instructed in simple oral hygiene procedures and that they can carry out tooth brushing procedures themselves when they are given encouragement and motivation

Over the long term, the tooth brushing program is cost effective as it reduced the number of visits of the dental team and is also likely to reduce the need for dental treatment.

This tooth brushing study has shown that such program gives promising results, and the key to long-term success of the program is to maintain the subjects motivation to make oral hygiene a part of their daily routine and thus sustain this improvement.

Our results are in accordance with other similar studies worldwide.

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