

# Motivational Training Programme for Oral Hygiene of Deaf Children

Liliya Doichinova<sup>1</sup>, Milena Peneva<sup>2</sup>

<sup>1</sup>Assistant Professor, Department of Pediatric Dentistry, Faculty of Dental Medicine, Medical University – Sofia, Bulgaria

<sup>2</sup>Professor, Department of Pediatric Dentistry, Faculty of Dental Medicine, Medical University – Sofia, Bulgaria

**Abstract:** *Introduction:* Oral hygiene care is the most effective way to prevent tooth decay. Its strict conduct is indispensable for maintaining good dental health, especially for children with disabilities. *Aim:* The aim of the study was to conduct training of deaf children in the rules of oral hygiene for a period of one year. *Materials and methods:* The study includes 100 children with acquired deafness aged between 5 and 12 years. For their training was used a specially designed methodology, which took into account their disabilities. *Results:* Results showed significant improvement in oral hygiene after six months of training. Learning and following the instructions in order to develop proper oral hygiene skills in children with impaired hearing is difficult due to communication issues with the dental team. The specific sign language had to be used. *Conclusion:* The created training program in oral hygiene in children with hearing disabilities, supported by specially crafted picture training system provide a real opportunity to improve the oral environment and reduce the risk of caries.

**Keywords:** deaf children, oral hygiene, training, motivation

## 1. Introduction

In every society there is a group of children with disabilities who have limited options for oral care leading to increased risk of oral diseases. Today, when Bulgaria is a full member of the European Union, authorities still don't pay attention to this problem, concerning this child population and the prevention of these diseases. There is not enough data about the oral health of these children. No data about the level of their oral hygiene and health knowledge of the people, who are taking care of these children - parents and special educators. The aim of the study was to conduct training of deaf children in the principles of oral hygiene for a period of one year.

## 2. Material and Methods

The study includes 100 children with hearing loss- 61 boys and 39 girls aged between 5 and 12 years. To conduct the study, we were authorized by the Ethics Committee for Research at the Medical University - Sofia (KENIMUS). For motivation and health education of children with hearing loss were used the following:

- 1) **Demonstration materials**, made by our team, that included enlarged models of plaster teeth with and without carious destruction; red silicone imitation plaque and plaque-retentive places; foam glued to the teeth with cavities, imitating softening of the tooth structure; art system presenting the rules for oral hygiene. In the work process were demonstrated plastic dolls, models and porcelain figurines of „dental devils“.
- 2) **Audio-visual materials** – cartoons, created by Colgate, The American Dental Association and slide films of the French Union for oral and dental health, UFSBD (Union Francaise pour la Sante Bucco - Dentaire);

- 3) **Motivational materials** – schedule was introduced to record each brushing in the morning and evening, as well as written instructions for the children and their parents. To establish the oral hygiene status was used the index of Greene & Vermillion (Simplified - 1964) [1], assessing the plaque on the vestibular surface of the available permanent teeth - 16, 11, 24, 31 and lingual surfaces of 36 and 46. If the permanent teeth had not yet penetrated, the plaque was evaluated on the vestibular surface of the primary teeth: 55, 51, 64, 81 and the lingual surface 75 and 85.

A special methodology for training in oral hygiene was used in accordance with the disabilities and psychological characteristics of the children with hearing loss. They love stereotypes and therefore the aim is to transforming the oral hygiene care into a stereotype.

### Methodology for training in oral hygiene of children with hearing loss (L. Doichinova M. Peneva)

The methodology consists of two parts:

1. **Educational part** - children are taught about the parts of the face, mouth, tooth structure, the reasons for the development of dental caries and the importance of oral hygiene and nutrition are being explained. For the motivation of the children were used animated cartoons of Colgate (<http://www.colgate.com.au/app/BrightSmilesBrightFutures/AU/Kids/HomePage.cvsp>) The American Dental Association; slide films of the French Union for oral and dental health, UFSBD (Union Francaise pour la Sante Bucco - Dentaire).

2. **Correctional and educational part** - to create cognitive and practical skills in the children so that they can maintain proper oral hygiene. In the training were used:

- Technique „Tell, Show, Do“ modified into „Show - Do“ and "Hand over Hand" as the best strategy for modeling the desired behavior;

- The method of imitation by using the „Do as I do” model;
- The method of visual pedagogy and step-by-step training in oral hygiene through specially created art system.
- The method of playing games for younger children, as the most suitable for the introduction of knowledge.

The created picture system presents the sequence of actions, structuring the different stages in the conducting of oral hygiene. The child meets the requirements for brushing teeth. For younger children, the knowledge is presented in the form of games associated with the children’s favorite toys, in order to make the cognitive process easier.

The training process needs a lot of patience and persistence in order to build proper oral hygiene habits. If interrupted by an onset of fatigue or an absence of attention, it should be resumed at a later stage.

Parents receive the art training system for oral hygiene and additional motivational materials, written advices and instructions to follow the scheme at home. The training program in oral hygiene is conducted in eight visits per year to make the necessary adjustments to the techniques of brushing. For processing of the obtained results was used t-test of Student. The data was entered into the database of MS Excel and analyzed with the statistical package SPSS 11.5.

### 3. Results

The results from the training in oral hygiene of children with hearing loss, for a period of one year, are presented in Table 1.

**Table 1:** Oral hygiene index of deaf children during training

OHI	x	SD	t	p
Baseline OHI	2.21	0.54		
After 1 week	2.13	0.45	0.13	>0.05
After 2 weeks	2.11	0.39	0.12	>0.05
After 1 month	2.14	0.38	0.71	>0.05
After 3 month	2.15	0.35	0.63	>0.05
After 6 month	2.03	0.38	3.01	<0.01
After 9 month	1.83	0.47	5.42	<0.001
After one year	1.73	0.51	6.38	<0.001

The very first week after the initial motivation and training a reduction of the oral hygiene index is being detected, disregarding statistical reliability to baseline. This trend continued until the third month of training. This shows the difficulty in influencing children with hearing loss and the need of persistent and continuous motivation. After this period, the improvement of oral hygiene was with high statistical significance as compared with the output value of the index. This improvement and reliability was maintained until the end of the training program.

### 4. Discussion

The specifics of the disability in children with hearing loss is a serious reason for poor implementation of the instructions and insufficient motivation for conducting oral hygiene [2]. These children have poor dental health. The reasons for this are the barriers for accessing dental care and the difficulties for communication with others. There are serious difficulties in the acquisition of knowledge and skills [2, 3].

In order to overcome the barriers in communication efforts special teachers are needed, as well as the efforts of parents and medical staff to assist the dentist [2]. Training is essential to change the behavior of children with disabilities [4, 5]. In the literature, there is not enough data on the state of oral hygiene in children with hearing loss. Many studies show worse oral hygiene in children with disabilities than in healthy children [6, 7, 8, 9, 10, 11, 12, 13, 14].

Reports show even worse results when hearing loss is combined with mental disorder [9]. In these cases the degree of oral hygiene is proportional to the social status and education of the parents [2, 5, 11]. Hearing loss puts the child at risk of communication and language deficits and reduced cognitive skills. It has been discovered that if the defect is acquired in the early life stages, there is a devastating effect on the maturation of the brain and the overall development of the child [8, 9, 10]. All these factors contribute to the poor oral health of children with hearing loss. Poor oral hygiene in children with hearing loss, established by the study, that we conducted, has been confirmed by other studies [5, 10, 11]. Training of oral hygiene in this special group requires more time or replacement of explanations with visual display [15, 16, 17].

The childhood is the best stage for the formation of health habits [18] in these children who can change their health profile at a later stage of their life [19]. Education in oral health is the key to prevention of oral diseases. different types of educational protocols have been reported - (direct / indirect) and personal instruction, self-study guide and audio-visual aids [20]. The results show that the written instructions are less effective than visual instructions, which are very easy to learn and carry information that is clear and easy to remember [19].

### 5. Conclusion

The created training program in oral hygiene in children with hearing disabilities, supported by specially crafted picture training system provide a real opportunity to improve the oral environment and reduce the risk of caries.

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## Author Profile

Liliya Doichinova is in Department of Pediatric dental medicine as Faculty of Dental Medicine – Sofia, Medical University – Sofia, Bulgaria