

# A caries preventive program among children in a district of Moscow

## Planning, implementation and outcome

### A preventive program focusing on erupting teeth was effective in controlling caries development

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Previous data indicates that caries prevalence in the permanent dentition among children and adolescents in Russia is moderate, however slowly increasing. The free Public Dental Health Service in Russia does not at the moment organise caries preventive programs on a national scale, while an increasing caries incidence can be predicted in the near future.

The aim of the present study was to plan, implement and evaluate the effectiveness of a caries preventive program during a period of 2.5 years offered to groups of children in Solntsevsky – a district of Moscow.

#### Epidemiological study

In order to provide a baseline for planning the caries preventive program, an epidemiological study was performed in 1993 on about 100 children in each of the age groups six, eight, ten, twelve and fourteen years, living in the district.

#### Recording systems

The clinical examination included recording of plaque on selected tooth surfaces using a classification from 0 to 2 (thick plaque). After supervised tooth brushing, the children were examined for caries. Each tooth surface was examined and classified in progressive stages of caries, involving opaque and discoloured enamel lesions, increasing stages of cavity formation, fillings with and without caries, and extractions due to caries. Gingival status in selected locations was classified from 0 to 2 (severe inflammation).

More than two thirds of the children had surfaces covered with thick plaque and evidence of gingivitis. Caries experience was high in the primary dentition, and low to moderate in the permanent dentition. The average number of surfaces with deep dentine cavitation, indicating pulp involvement in

fourteen-year olds, was 1.72. Caries on primary molar teeth accounted for about 80% of the accumulated caries experience among eight-year-olds. Caries on permanent first molars accounted for about 70% of the accumulated caries experience among the fourteen-year-olds. The occlusal surfaces on permanent molars were most prone to caries in the permanent dentition. Caries on the occlusal surfaces was found to be initiated during the eruption period and was ascribed to the excellent conditions for bacterial growth at this time.

Data from the epidemiological investigation strongly indicated that a preventive program offered to children in the district should focus on molar teeth in both dentitions and should be implemented during the initial eruption period of the primary and permanent molars.

#### Preventive program

Three groups of children (A, B, C) at the age of about three, six and eleven years were selected in 1994 to participate in the program. The study group A consisted of all 45 three-year-olds from one kindergarten in the district. A control group of 45 five-year-olds from the same kindergarten was selected for evaluation at the end of the study period (1996). Group B consisted of those 100 out of 205 screened six-year-olds from one kindergarten, who were at the earliest stage of eruption of permanent first molars. Group C consisted of those 100 out of 303 screened eleven-year-olds from two schools in the district who were in the earliest stage of eruption of permanent second molars. Every second child in groups B and C was selected to participate in the program (study groups). The remaining children in each group followed the dental service offered by the local Health Service System (control groups).

The caries preventive program was based on: 1) education on caries disease of the child, parents and teachers, 2) training

in tooth brushing, and 3) professional plaque removal performed according to individual needs. Sodium fluoride (2%) was applied on active lesions, and sealant application was performed if the lesion showed signs of progression at more than two visits. The preventive program for the three-year-olds was based only on statements 1) and 2).

The children in groups B and C were examined in March 1994 (baseline), after one and after 2.5 years, respectively (September 1996). Due to the age of the children in group A, these children were only examined after 2.5 years of the program. The examination technique was similar to that used for the epidemiological investigation, however slightly modified.

## Results

After 2.5 years the children in study group A had improved the oral health status significantly compared to the children in the control group. The caries experience among children in this study group was about half of that observed among children in the control group (4.91 def-s versus 8.60 def-s).

At baseline, the oral status, including the caries experience among children in groups B and C was in general similar between children in the study and in the control groups. During the study period, no improvements in oral hygiene were noticed among the children in the control groups B and C, in contrast to the study groups where a significant improvement in the oral hygiene and gingival status was observed. Due to a high pre-study caries experience in the primary dentition among the children in group B, no effect of the preventive program was observed in their dentition. However, the program was highly effective to control dental caries in the permanent dentition among the children in the study group who ended up with a mean DMF-S of 0.28, compared to 2.24 among the children in the control group (Fig. 1). Similarly, the caries experience among children in study group C was significantly lower at the end of the study (3.12 DMF-S) than among children in control group C (6.35 DMF-S). The program was especially effective in controlling caries on the occlusal surface of permanent first and second molars. Nearly all children used fluoridated toothpaste. The mean number of visits at the clinic during the first year was five for the children in group B and 4.5 for children in group C. The mean number of visits the following year decreased to 3.4 and 3.3, respectively.

## Conclusions

The preventive program was highly effective in improving the level of oral hygiene and thereby reducing or even controlling the plaque induced disease activity.

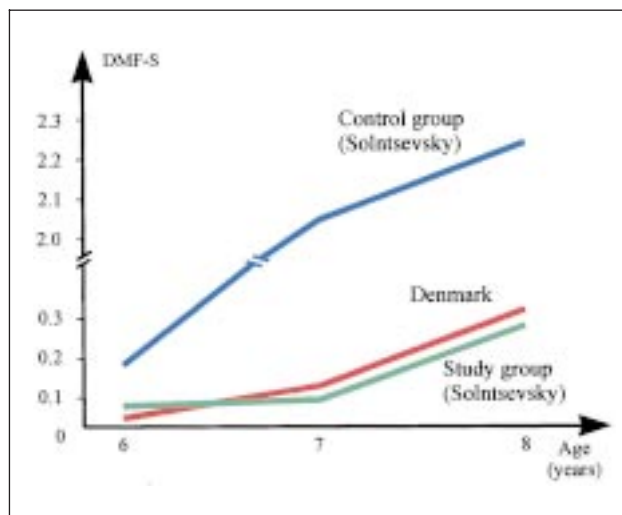


Fig. 1. The incidence of caries in group B and six-to-eight-year-old Danish children in 1994-1996.

Kuzmina I. A caries preventive program among children in a district of Moscow. Planning, implementation and outcome (PhD thesis). Copenhagen: School of Dentistry, University of Copenhagen; 1997.

The monograph consists of 79 pages with 93 references, 32 tables, 12 figures and summary. It is available at Panumbiblioteket, Blegdamsvej 3, 2200 København N.

Supervisor was Associate Professor, Ph.D. Kim Ekstrand, Department of Cariology and Endodontics, School of Dentistry, University of Copenhagen.

The defence took place on 25th of September 1997, at the School of Dentistry, University of Copenhagen. The title of the lecture was: »A caries preventive program among children in a district of Moscow«. The opponents were Professor, Dr.Odont., Ph.D., Sven Poulsen, Associate Professor, Dr.Odont. Erik Friis-Hasché and Professor, Ph.D. G.N. Pakhomov

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