

MONITORING AND INFORMATION FOR CARIES RISK CONTROL- BETWEEN ADVANTAGES AND LIMITATIONS

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Abstract

The aim of this study was to assess the effect of information on oral and dental health in a group of schoolchildren's. **Material and method.** Dental status for 162 children attending a school in the city of Cluj-Napoca was follow up for 1 year, using the DMFT index. Children received information's about brushing technique, regular dental check-up and healthy diet in the course of the examination. Parents were informed about the diagnosed lesions and the need for treatment. **Results.** The number of monitored children varied between 162 at the beginning of the study (mean age 7 years) and 160 after 1 year (mean age 8 years), a numerical difference that did not exceed the statistically accepted 10% threshold. The DMFT progressively increase from 2.95 at the age of seven, to 4.02 at the age of eight, with statistically significant differences ($p < 0.001$). **Discussions.** The Romanian model of oral healthcare is focused on curative treatments instead of preventive strategies. Schools have the mission of promoting plans aimed to extending children's knowledge in preserving and improving oral health. It is also necessary to strengthen educational programs, as it is very important to maintain the motivation of children and that of their parents. **Conclusions.** Education and information alone, in the particular case of our group, did not accomplished an adequate control for caries risk.

Keywords: education, information, tooth decay

Dental caries is one of the most prevalent non-communicable disease, which affect children's and adults as well. For this reason, it represents a major public health issue, although it is largely preventable [1]. During childhood, caries does not only affect temporary and immature permanent teeth. The outcomes of this disease may also lead to more health-related problems, including: restricted activity, a reduced quality of life, limiting social interactions with the development of inferiority complexes, increased treatment time and cost, loss of school days, reduced ability to

learn, emergency visits, difficulty in sleeping and delayed growth and development [2, 3]. In view of the fact that dental caries is a multifactorial disease, prevention requires a multilevel basis of intervention considering socio-economic factors, public health approaches, oral health promotion and inter-sectoral collaboration (medical, educational, administrative) [4-7]. In Romania, we noticed the need for targeted comprehensive intervention in order to assess the incidence, identify the most frequent risk factors and provide effective

preventive strategies. During the last 30 years, the dentists, who are working in school dental offices, supposedly provide dental health informations at the beginning of every school year, but their number is limited since not all schools have a dental office. Dentist evaluate children dental status when school year initiate and inform the teacher and subsequently the parents about existing decay. Parents are not compelled to treat the children in school's dental office and did not have a specific period for treatment to be perform; for these reasons, we noticed a gap between information and action. Since 2004, the school curricula include free optional health education classes that instruct children about healthy lifestyle and different health-related issues, but information on decay prevention is limited and the correlation between oral health and general health is absent. Parents of today's 6- to 8-year-old children did not benefit from these classes and we can assume a lack of information/ preparation in this particular field, in the general population [8]. Treatment of simple and complicated decays in young children often require sedation methods or general anaesthesia, elements that generate supplementary cost. Upholding restorative treatment results impose also active preventive measures and we consider that information along with education and prevention, represent the base for children's oral health related quality of life improvement [7. 9]. **The aim** of this study was to assess the effect of information on oral and dental status in a group of schoolchildren's. The null hypothesis tested: information leads to immediate actions and improved children's oral health.

Material and method. Dental status for 162 children attending a school in the city of Cluj-Napoca (the 2nd city in terms of demographics and industrial development in Romania) was follow up for 1 year. Dental status was appraised in the school's dental office, as part of annual general evaluation, using the DMFT index. A single examiner, to reduce the risk of biases, carried out the dental examination, under the dental unit lighting conditions, on dry teeth (using dental unit air spray) [2]. Diagnosis of dental surfaces was established using the visual method (inspection) and non-pressure palpation with the examination probe, without other complementary examinations.

Decay prevalence for permanent teeth, using the DMFT index, was considered, which allows a quantitative analysis. To characterize the items of the DMFT index the following criteria were used [10, 11]:

- The decay item D was assigned to decay lesions affecting enamel, dentine and pulp, without making a differential diagnosis between the stages of dental caries. According to WHO recommendations, displaced fillings, completely or partially, with or without secondary decay, were also included as caries;

- The filling item F included the total provisional or definitive restorations that encountered morphological, aesthetic and functional criteria;

- The missing item M was assigned to temporary teeth that had been extracted 2 years

before the physiological replacement interval, after conservative treatment failure (teeth subject to trauma were not included in this category).

Children received information's about brushing technique, regular dental check-

up and healthy diet during the examination. Parents were informed about the diagnosed lesions and the need for treatment, but the decision and the choice of the dentist were aspects that were settled on by the family. The data were processed using IBM SPSS Statistics 25 (SPSS Inc, Chicago, IL, USA), at $p < 0.05$ level of significance.

Results. The number of monitored children varied between 162 (83 girls, 79 boys) at

the beginning of the study (mean age 7 years) and 160 (82 girls, 78 boys) after 1 year (mean

age 8 years), a numerical variation that did not exceed the statistically accepted 10% threshold.

The DMFT index evolved progressively increasing from 2.95 at the age of seven, to 4.02 at the age of eight, with statistically significant differences (table 1).

Table 1. DMFT index evolution during the follow-up period

Age (years)	DMFT index	p
7 y	2.95 $\pm$ 0.71	<0.001
8y	4.02 $\pm$ 0.80	

The interest of the family and children related with oral health was assessed by analysing each item of the DMFT index (table 2).

Table 2. DMFT index items evolution

Age (years)	Gender	D	M	F
7 y	G	2.02	0.03	0.95
	B	1.96	0.06	0.91
	p	<0.001	>0.005	>0.005
8y	G	2.35	0.18	1.65
	B	2.32	0.08	1.45
	p	<0.001	>0.005	>0.005

The most affected tooth was the first permanent molar, since the post eruptive maturation occurs during this age period, with the existence of active caries lesions on the temporary teeth (table 3).

Table 3. Temporary teeth status for selected group

Age (years)	Gender	dmft
7 y	G	4.91±2.19
	B	4.72±2.09
8y	G	5.04±1.40
	B	5.02±1.10

Discussions.

Education and information alone, in the particular case of our group, did not accomplished an adequate control for caries risk; the null hypothesis formulated was rejected. The Romanian model of oral healthcare is mainly characterized by private service, focusing on curative treatments instead of oral preventive strategies, showing insufficient or quasi absent prevention programs. Recording and reporting data regarding oral health status can warrant the request for oral health resources and implementation of oral health programs, to reorient oral health services from treatment to prevention [7, 9]. The WHO recommends, for oral health surveillance, to routinely collect epidemiological data, for every group of age [10, 12]. Data regarding the oral health status of 6 and 12-year-old children from nine schools located in Transylvania and Central Region of Romania in correlation with oral-health behaviour indicated that untreated decays were more prevalent in the rural areas and in male patients; restorations and sealants were more prevalent in the urban areas, in girls [13]. Managing caries

at an early stage can also prevent pain and unnecessary treatment expenses and there is strong evidence that caries preventive measures are more cost-effective than the treatment [14]. For example, Danish dental care providers chose oral hygiene education as the priority. The Norwegian and Icelandic dental care providers chose both oral hygiene education and the use of fluoride as priorities, while most Swedish dental care providers preferred to furnish dietary advice and oral hygiene education and additional fluoride for high-risk patients [14, 15, 16]. Oral health education is an important step in the child development. Considering decay aetiology, it was thought that only biological and dietary determinants were responsible for oral health in children, but in the last decade a new, more complex framework of interaction between different factors was proposed to include the determinants related to the social environment, and the behaviours that influence health. Specifically for this reason, parents have a very important role, but paediatric dentists and educators should not be underestimated. Schools have the mission

of supporting these figures in the child's growth path, promoting projects aimed at deepening and improving children's knowledge in preserving and improving oral health. It is also necessary to periodically strengthen educational programs, as it is very important to maintain the motivation of children and that of their parents [16, 17]. School, as a place to promote healthy attitudes, has a greater impact on the child, compared to advice and information provided by family, which is why it could represent an important step in the decay prevention algorithm. Discursive presentation is not enough; argumentation and projection of long-term effects are considered to be more effective [12, 14, 17]. Literature data reports how the lack of oral hygiene care in children not only reflects a lack of knowledge, but it is also the result of personal barriers or external constraints, such as the emotional reactions of children that cannot be controlled, or the manual skills required for proper oral hygiene are not exercised and reinforced [17, 18, 19]. Oral health education is an important step in the child's education. Parents are the first figures responsible for this task, along with the paediatrician and the dentist, as they are the enforcers of the rules and the supervisors of the implementation of oral and dental hygiene daily. The schools have the task of supporting parents and professionals, in promoting projects aimed at improving the knowledge of children about oral health, by including it into their curriculum [18]. Health literacy encompasses the individual

skills necessary for making appropriate health choices and involves a dynamic interaction between the demands of health care systems and individuals' skills [20, 21]. Low health literacy is also common in health systems that have transitioned from controlled to market economy [21]. Health literacy plays a vital role in connecting socio-economic and demographic differences with health outcomes, as low health literacy is closely associated with social determinants of health and contributes to disparities, poor health outcomes, inequalities, and increased health care costs [21, 22]. Considering the significant expectations imposed on parents when choosing the appropriate treatment for their children, health literacy emerges as an important consideration in paediatric oral health care [20, 23]. Higher parental health literacy is associated with favourable health behaviours in children, including diets, consistent dental hygiene, and increased physical activity [21].

Conclusions. Education and information alone, in the particular case of our group, did not accomplished an adequate control for caries risk. Dental decay, a disease of microbial aetiology with progressive evolution over time, affects school-age children in Romania mainly because prevention programs are almost absent or only interest small population. Programs for dental caries prevention must start earlier in the temporary dentition to allow the appropriate evolution of the permanent teeth.

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