

MODERN MANAGEMENT OF DENTAL DECAY IN CHILDREN AND ADOLESCENTS - A REVIEW

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Abstract

Health is a right that requires responsible individual actions. Oral health corresponds to an important part of general health, even if for a large majority of people healthy teeth are equal with beautiful teeth. For children and adolescents „having an attractive smile” is synonymous with social acceptance and success. Dental decay has a high incidence in children in our country and progress in decay prevention, diagnosis and treatment is not reflected in children and adolescents’ oral health. It is established by studies conducted by dentists and psychologists that dental decay can affect the quality of life by engendering specific eating behaviors, particular ways of speech or smile and unfortunately pain.

The aim of this article is to emphasize the modern approach of dental decay in line with principles of non-invasive strategies. An important element to be considered - prophylactic methods - must be included in every treatment plan, in order to control individual caries risk. The time invested in prevention during childhood represents a real benefit for the future adult’s oral health. Many a dental problems can be avoided if dental decay management relies on the link between medical science and every day practice.

Keywords: dental decay, prevention, remineralization, children.

Oral health is a fundamental component of overall health. Dental decay has a complex determination and various etiological factors. Diet and bacteria in the dental plaque play an essential role in the development of caries. Interventions in children and adolescents are considered to be very effective, because the disease has a dynamic evolution in a group or in the same subject at different periods of life [1].

Preventive measures for dental caries should be included in the patient’s treatment plan at any age, in order to preserve restorative treatment outcomes and reduce future caries risk [2,3].

The aim of this article is to underline the modern

approach of dental decay according to minimally invasive strategy principles.

Method

We performed searches on the following databases / websites: the American Academy of Pediatric Dentistry Policies and Guidelines, the European Academy of Pediatric Dentistry Archives and Guidelines, the International Association of Pediatric Dentistry Online Oral Health Resources and Haute Autorité de la Sante Recommendation; the search terms included “caries risk”, “decay prevention”, “minimally invasive treatment”, “children and adolescents”. In the evaluation of the articles and guidelines the following problems were addressed:

1. The points in time for caries risk increase in children and adolescents;

2. The specific criteria of minimally invasive dentistry for children and adolescents;
3. The role of prophylactic and preventive measures for dental decay in the patient treatment plan.

Results and discussion

Dental care and follow up for children, especially at young ages, have specific features:

1. Patient behavior and its management requires a trained medical team, in order to meet the children's particular needs;
2. Parents' lack of concern or knowledge to preserve the integrity of temporary teeth. If temporary teeth are neglected, permanent teeth will erupt in an oral environment with modified microbial and salivary parameters, a risk factor for caries;
3. absence or inconsistency regarding dental hygiene;
4. physiological characteristics of temporary and permanent teeth [4,5,6].

Caries risk and developmental stages

Caries risk is defined as the probability of an individual to develop a certain number of caries lesions during a specific period of time [1]. Risk assessment is an important step in decision-making and treatment planning [7]. In children and adolescents we defined specific stages of high risk for tooth decay, when it is essential to make use of preventive measures:

1-3 years:

- diet evolution and diversification, preference for refined product that does not require an active mastication;
- neglected or inconsistent oral hygiene at this stage of child development; following the example of adults, the child tries to use the toothbrush but does not have the skills to perform a correct routine. Parents will complete the brushing of their children, especially in less accessible areas of the dental arches.

5-7 years:

- diet with high carbohydrate intake, individual selection of snacks;
- the child acquires greater ability to use tooth brush and gradually can perform oral hygiene alone, although parents intervention is still necessary to oversee and control the routine;
- first permanent molar eruption (often confounded per a temporary tooth).

11 to 14 years:

- diet with high carbohydrate intake, advertising and group opinion can affect tooth friendly products selection;
- puberty-somatic, hormonal and psychological

changes;

- unfavorable attitude relative to the basic rules of oral hygiene, dental care, dental check-up and treatment sessions [8,9,10,11].

Dental decay management

Currently, treatment of dental caries is reconsidered. Modern methods of detection and early diagnosis allow the individualization of clinical stages that can benefit from remineralization, if oral ecosystem parameters changes in a positive manner. To achieve this, the treatment of dental caries should be approached in a holistic manner, positioned in a sequence that lay stress on preventive methods and patient active involvement [12,13].

Modern management of dental decay uses of the following algorithm:

- detection and dimensional valuation of caries (decay type, associated histo-pathological changes);
- monitoring the lesion, determine whether restoration or remineralization treatment will be performed;
- assessing individual carious risk;
- diagnostic/prognostic/therapeutic measures - lesion treatment using methods belonging to restorative or preventive dentistry;
- periodical follow up, monitoring [12,14,15].

Numerous studies have shown that an important factor in the positive or negative feedback of preventive measures is represented by the social context. Often patients are not informed on dental pathology, neglect regular dental check-up, attend the dental office only in case of an emergency and embrace a diet rich in sugars and fats [16].

The first consultation dentist-patient is crucial to establish adequate communication, the basis of effective treatment. The information provided by the physician to the child and parents should be tailored to their educational and cultural context. What may seem like a "waste of time" in the first treatment session is actually a true valuation of our profession, because in the absence of preventive attitudes, the long-term prognosis of dental restorations is unfavorable and may be a failure [17,18]. Adequate oral health requires a collective effort of everyone involved: medical team, child, family, and teachers, and if we consider the heterogeneity of those involved in this process we can comprehend why it is so difficult to move forward effective programs for dental caries prevention and treatment [19].

The question remains which dental decay approach is more effective for children and adolescents? A possible answer may result from the comparative analysis of the two models proposed in literature (table I):

These recommendations cannot be implemented literally; they must be adapted to the patient's caries risk, which may evolve over time and must be evaluated in the control session [16,19,20].

Table I. Restorative versus preventive approach in dental decay management in children and adolescents.

RESTORATIVE MODEL	PREVENTIVE MODEL
Treatment of all active carious lesions	Diagnosis of active and inactive carious lesions
Restorative treatment goal is to arrest caries progression	Remineralization-for non cavitary lesions limited to enamel
Decay treatment-cavity preparation and restoration	First treatment objective -remineralized incipient lesions.
Extensive restorations - all dental tissues considered demineralized and infected will be eliminated	Restorations are made only if preventive approach failed
	Minimally invasive restorations - for demineralized tissues the first therapeutic approach will be remineralization

Conclusions. Compliance for dental care and regular dental follow up in the absence of subjective complaints indicate the interests of the child and family in favor of oral health. A minimum rate of 2-4 check-ups per year for children and adolescents would maintain the results of previous treatments, reversible forms diagnosis and treatment of dental caries with minimal tissue removal [12,14,20]. This goal requires close cooperation with children and family and in the particular case of our country it must overcome educational barriers.

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