

Early Childhood Caries: Etiology, Diagnosis and Prevention

Ivona Oreč¹ and Dubravka Negovetić Vranić^{2*}

¹*Dr.med.dent., Department of Paediatric and Preventive Dentistry, School of Dental Medicine, University of Zagreb, Croatia*

²*Department of Paediatric and Preventive Dentistry, School of Dental Medicine, University of Zagreb, Croatia*

***Corresponding Author:** Dubravka Negovetić Vranić, Department of Paediatric and Preventive Dentistry, School of Dental Medicine, University of Zagreb, Croatia.

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Worldwide, 60 - 90% of school children and nearly 100% of adults have dental cavities, often leading to pain and discomfort. Its etiology is that it is a multifactorial disease which affects both dentition and all ages. Despite the improvement of oral hygiene and oral health, tooth decay remains a major public health problem [1].

Tooth decay is a chronic process that slowly progresses and without treatment leads to a total loss of tooth structure. Diagnosis of this condition is that it can affect enamel, dentin and cement. Although dental caries is caused by many related factors, the first cause is the increase of cariogenic bacteria on the tooth surface. The most widespread are cariogenic bacteria *Streptococcus mutans*, *Lactobacillus casei* and *Actinomyces viscosus*. First mentioned, *Streptococcus mutans*, is considered as most dangerous in the process of decay. It creates short chain carboxylic acids that dissolve the hard dental tissues - enamel and dentin. Also the formation of insoluble extracellular polysaccharides increases their adherence, and adherence of other bacteria on the tooth surface. As mentioned above, tooth decay is a chronic disease and does not occur overnight. Namely, creating cavities precedes dentobacterial plaque. Dentobacterial plaque is soft layer of living and non-living microorganisms in matrix, rich in polysaccharides and glycoproteins, which adheres to the surface of teeth and can only be removed by mechanical cleaning. The creation of dental plaque is a complex process that takes place in several phases which are not clearly defined [2].

Early childhood tooth decay, also known as "baby bottle caries", is a growing problem with very serious consequences for children, parents and orthodontists. The name for this type of caries comes from the fact that the decay is usually a result of allowing children to fall asleep with sweetened liquids in their bottles or feeding children with sweetened liquids multiple times during the day [3]. All that is usually in combination with insufficient oral hygiene or its complete absence. With an average of 15% of children, early children's tooth decay leads to extensive destruction, especially the front teeth in the upper jaw, with an average of eight affected teeth. Keeping primary teeth healthy is extremely important because they keep the place for permanent teeth and also encourage proper development of the jaw. If primary teeth are destroyed by decay and premature removed, it may disturb the position of permanent teeth, which consequently requires wearing braces [4,5].



Figure 1: Healthy primary dentition with compomer sealants on molars.

Today, dentistry’s approach to dental caries is changed. From the attention on the lesion itself, involving limited therapy, typically restoration procedure, dentist and scientist are directing attention to the disease itself, which includes prevention, control and monitoring [6]. Dental cavities can be prevented by maintaining a constant low level of fluoride in the oral cavity. Before the cavity forms, the process is reversible, but once a cavity forms, the lost tooth structure cannot be regenerated.

Therefore, when it comes to tooth decay, preventive therapy is the first choice. Restoration therapy will of course still be needed when there is a difficult collaboration with the patient, or in situations where prevention is unsuccessful [1,6].

It is recommended that the first dental visit should be by the age of 1 (6 - 12 months of age). In this age the child usually has no cavities, so there is no need for intervention, especially for those that cause pain and discomfort. The sooner children begin getting regular dental checkups, the healthier their mouths will stay throughout their lives. There is overwhelming evidence that frequent consumption of sugars is associated with caries. Dietary advice should be aimed at limiting the frequency of sugar intake. During the exam, dentist checks all existing teeth for decay, examines child’s bite, and looks for any potential problems with the jaw, gums and oral tissues. If indicated, the dentist cleans teeth and assess the need for fluoride. Fluorine can be administered in the form of toothpastes, rinse solution, gels, lacquer, dragees, chewing gum, restoratives and fluorides releasing devices. Fluoride varnishes contain high concentrations of fluorine (1000 - 56300 ppm F). It is enough to apply it 2 to 4 times a year and can be used extremely successful for prevention of dental caries in primary and permanent teeth. At the first exam should dentist also take the opportunity to demonstrate parents the technique of brushing the teeth (modified Bass technique is usually recommended). After this first visit, the dentist will suggest a schedule of follow-up visits (usually 2 - 4 times per year) [7].



Figure 2: Fluoride release preventive devices.

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