

## 12. COMPREHENSIVE ANALYSIS IN THE DETECTION OF CARIES SUSCEPTIBILITY IN CHILDREN WITH DENTAL FLUOROSIS



**Author:** Irina Tonofa; **Co-author:** Maria Patranac

**Scientific advisor:** Stepco Elena, PhD, Associate Professor, „Ion Lupan" Department of Pediatric Oral-Maxillofacial Surgery and Pedodontics, *Nicolae Testemițanu* State University of Medicine and Pharmacy, Chisinau, Republic of Moldova

**Introduction.** Dental fluorosis is the most common and prominent early-stage symptom of chronic fluorosis, which is caused by excessive fluoride intake during tooth development. Numerous studies have shown that patients with dental fluorosis suffer from dental caries less often, and the most common forms of dental caries at the age of 12 and 15 years are early and superficial. There is also a trend that fluorosis teeth with higher scores are more prone to caries due to more severe post-eruptive changes.

**Aim of study.** A comprehensive literature review in the detection of caries susceptibility in children with dental fluorosis.

**Methods and materials.** The study is based on the analysis of publications from the scientific databases of the national and international libraries for the period 2015-2023. All studies that reported data on the susceptibility of permanent teeth to dental caries in children with dental fluorosis were included in this review. The web databases were searched for publications like PubMed, Google Scholar, SCOPUS, and Hinari.

**Results.** Although the pathogenesis of dental fluorosis is not fully elucidated, the causative factor is well known. Excess fluoride ingested by the child in the first years of life causes dental fluorosis. Much attention has been paid to the composition and structure of fluorotic enamel, and fluorine has been assigned the role of the chemical element with the highest anticariogenic potential. The relationship between fluorine intake during the period of development of dental hard tissues and the anticarious resistance of teeth has been recognized. At the same time, less attention has been focused on other factors that can intervene in the anticarious resistance of fluorotic teeth, such as the concentration and quality of salivary nitrites, individual masticatory patterns, dietary habits, etc. The results of the literature review demonstrate the role of salivary nitrites in the prevention of dental caries, which increase the resistance against salivary acidification *in vivo* and *in vitro*, thus preventing the development of caries in patients with dental fluorosis. Additionally, it has been suggested that fluoride presented in the oral cavity may delay bacterial growth and metabolism by inhibiting enolase and ATPase. Another mechanism that may explain the low prevalence of caries in patients with dental fluorosis is the much slower and longer chewing pattern due to compromised enamel.

**Conclusion.** To be able to explain in more detail the balance between caries progression and reversal in patients with dental fluorosis, which is a more complicated one, further studies are needed.

**Keywords.** Tooth susceptibility, dental caries, dental fluorosis.