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TEETH HYPOMINERALISATION. LITERATURE META-ANALIS OF ETHIOLOGY AND TREATMENT

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Actuality: According to epidemiological research data teeth hypomineralisation condition is widely spread all over the world that range between 2.8-40.2 % in different parts of the world [1]. This condition affects both primary and secondary dentitions [2], making teeth hypomineralisation condition frequent in dental clinic routine. This group of conditions may also cause behavioural and mental problems as patients have mental fears, anxieties, bullying [3]. These are reasons why we have decided to highlight the topic in this meta-analytical thesis.

Materials and methods: We have analysed 73 sources of literature from PubMed, Scopus, Web of Science, Google Scholar bases. The data collected was analysed to obtain descriptive analyse.

Discussions: The term hypomineralisation was introduced in 2001 by Weerheijm et al [4]. Hypomineralisation primarily affects the enamel, which is the outermost layer of the tooth. Enamel is normally highly mineralised and hard, but in individuals with hypomineralisation, the enamel is less dense and weaker than usual. The exact cause of teeth hypomineralisation, also known as enamel hypomineralisation or enamel hypoplasia, can vary and may involve a combination of genetic, prenatal, and environmental factors. Here are some of the potential reasons and contributing factors for teeth hypomineralisation:

✓ **Genetics:** Genetic factors can play a significant role in the development of enamel hypomineralisation. Some individuals may be more predisposed to this condition due to their genetic makeup. If a family has a history of dental enamel issues, there may be a genetic component involved [5].

✓ **Prenatal Factors:** Events that occur during pregnancy can influence the development of a child's teeth, including enamel formation. Prenatal factors that may

contribute to enamel hypomineralisation include: maternal illness, medications, nutritional deficiencies, environmental factors [6].

✓ Fluoride Exposure: Excessive fluoride exposure during tooth development can lead to enamel hypomineralisation. This can happen through high levels of naturally occurring fluoride in drinking water or excessive use of fluoride-containing products [7].

✓ Infection or Illness: Certain childhood illnesses or infections can disrupt enamel development, especially when they occur during the tooth-forming years [8].

✓ Premature Birth: Premature birth or low birth weight can be associated with enamel hypomineralization, as tooth enamel formation primarily occurs in the later stages of pregnancy [8].

✓ Trauma: Physical injury or trauma to developing teeth can lead to enamel defects, including hypomineralization [9].

✓ Systemic Conditions: Some systemic conditions or disorders, such as amelogenesis imperfecta, can affect the development of tooth enamel, resulting in hypomineralization [8].

Clinically patients complain on:

➤ Breakdown: post-eruptive enamel breaks lead to dentine exposure [10].

➤ Appearance or aesthetic problems: teeth affected by hypomineralization often appear discoloured, ranging from creamy white or yellow to brown. The affected enamel may also be rough or pitted, making it more susceptible to tooth decay and sensitivity [1].

➤ Sensitivity: Hypomineralized enamel is more porous and less resistant to acid and bacteria, which can lead to increased tooth sensitivity and a higher risk of cavities. Individuals with this condition may experience pain or discomfort when consuming hot or cold foods and beverages [11].

➤ Anaesthesia problems: we should take into account that in hypomineralised teeth pulp is not well protected from external stimuli, which is possibly related to chronic pulp inflammation [12].

➤ Susceptibility to caries: weakened enamel is more prone to cavities, because it can be more easily eroded by acid-producing bacteria in the mouth [13].

The treatment aim of teeth with hypomineralisation is based on managing the symptoms, strengthen the enamel, and prevent further dental problems. The specific treatment plan may vary depending on the severity of the condition and the individual's age. Here are some common treatment approaches:

○ Fluoride Treatment: Fluoride is a mineral that helps strengthen tooth enamel and make it more resistant to acid attacks from bacteria. Dentists may apply fluoride topically to the affected teeth in the form of gels, foams, or varnishes. This treatment can help remineralize the enamel and reduce sensitivity [11].

○ Dental Sealants: Dental sealants are thin, protective coatings applied to the chewing surfaces of molars and premolars. They create a barrier that helps prevent bacteria and food particles from getting into the grooves and pits of the teeth, reducing the risk of cavities [11].

○ Infiltration: Infiltration with low viscosity resin like Icon prevent from future mineral augmentation, improve micromechanical properties and protect from acid attack [14].

○ Whitening: bleaching helps to camouflage opacity spots [1].

○ Build-up technique: using composite resins as restorative materials show good results, however require long-term maintenance being susceptible to discoloration, marginal fractures [11].

○ Full or partial coverage: is evidently based successful solution in severe cases, prevent further breakdowns, sensitivities, occlusal changes [11].

Conclusion: Due to wide prevalence and variety of treatment patients with hypomineralisation described in literature we make the conclusion that routine dental checkups are crucial for monitoring the condition and addressing any emerging issues promptly. Dentists can assess the progression of enamel hypomineralisation and determine the most appropriate treatment plan based on the individual's specific condition and needs. Dentists and dental hygienists can provide guidance on maintaining good oral hygiene practices and making dietary choices that reduce the risk of cavities. This may include advice on limiting sugary and acidic foods and drinks.

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