EDITORIAL

Effective Prevention and Management of Dental Erosion and Tooth Decay

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Dental caries is a chronic non-communicable condition that afflicts people throughout life, from birth to old age. The prime cause of the disease is the cariogenic bacteria that utilize sugars present in food and beverage products for energy production, resulting in acids damaging both enamel and dentin. It has a direct impact on oral health and psychological well-being and affects the quality of life of people, their families, and communities in general. Despite being largely preventable, the prevalence of dental caries has remained relatively stable over the past three decades, continuing to pose a significant public health challenge [1].

New scientific understanding has brought about new conceptual models of dental caries, which in turn have affected the prevention and treatment strategies. What was once a communicable and inevitable disease is now a preventable, non-communicable condition related to an imbalance in the oral biofilm. The development of caries is closely associated with the consumption of free sugars, and poor dietary habits that are now considered to be major contributing factors in its onset and progression [1-3].

Accurate data on the characteristics of dental caries and related conditions are useful for the development of innovative strategies to prevent tooth decay and preserve dental health. Another major issue is dental erosion, defined as the progressive loss of enamel due to chemical or physical processes that are often associated with exposure to acidic substances. Erosive tooth wear can cause increased dentin sensitivity, functional damage to the teeth, and aesthetic changes, such as discolouration or shortening of the teeth [4]. A strong association has been found between tooth wear and decreased oral health-related quality of life, as it can negatively affect both physical and psychological well-being [4, 5].

The prevalence of erosive tooth wear varies significantly by region, with studies indicating that in adults, the occurrence of this condition ranges from 2% to 100% depending on the country. However, prevalence data on erosive tooth wear are scarce or unavailable in many regions, including parts of Asia, South America, the United States, Southeastern Europe, and Africa [6]. Tooth erosion tends to worsen with age, and it has become increasingly common among adults, particularly older individuals, many of whom experience moderate to severe levels of wear. In some cases, dentin exposure occurs in 2-45% of incidents involving tooth erosion [6-9].

Tooth erosion is a gradual and irreversible process that can continue if not properly managed. Severe cases often require therapeutic interventions, which may involve restoring multiple teeth or even the entire dental arch. Such treatments can be complicated and pricey. Consequently, it is not easily accessible to financially restricted individuals, mainly those in socially disadvantaged groups [9]. Thus, developing effective preventive and therapeutic strategies is crucial to delay the progression of dental erosion and reduce the requirement for expensive restorative procedures [10].

The common conditions of caries and erosion present challenges in addressing them. Current management strategies must change to emphasise prevention, including public health policy action. The non-communicable and preventable nature of these conditions should be integrated into broader oral health policy. Along with traditional, evidence-based practices such as regular brushing with fluoridated toothpaste, other interventions based on natural methods like addressing biofilm imbalances could be promising [7-10]. This includes exploring ways to reduce sugar intake, enhance plaque control, and improve salivary function, making them both effective and cost-efficient [11].

For this reason, earlier intervention through probiotics and prebiotics used to promote healthy oral microbiomes in childhood is likely to contribute to the prevention of long-term tooth decay. As our comprehension of dental caries continues to evolve, traditional treatment approaches will be replaced with more creative alternatives that focus more on the causative factors involved with the condition. These strategies align with the principles of minimally invasive dentistry, which are characterized by preserving as much tooth structure as possible while prolonging tooth longevity. This approach is to address dental issues with a focus on

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maintaining overall dental health and avoiding invasive procedures whenever possible [11].

The non-invasive management of dental deterioration usually involves nutritional counselling, oral health education, and anti-erosive treatments. These measures prevent or slow the progression of tooth wear and maintain oral health. Anti-erosive treatments are critical in managing tooth erosion because they provide protective effects to the enamel [10].

When the integrity of the tooth is lost, resulting in impaired aesthetics, increased dentin sensitivity, and pulp exposure, then complementary management strategies are adopted. There are numerous treatments to address tooth wear, including conservative approaches like cement or composite resin restorations or more invasive procedures like crowns, bridges, or even full-mouth rehabilitation [11].

It is also important that the devastating effect of tooth erosion and decay on the daily life of more than half the population, to remain innovative in search of effective dental treatment. Researchers and experts around the world add vital contributions that have helped elevate dental health practice into a discipline with a vital relationship to our well-being overall [10, 11].

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