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# DENTAL ENAMEL EROSION: MODERN ASPECTS OF ETIOLOGY, PATHOGENESIS, AND PREVENTION

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**Abstract:** Dental enamel erosion is one of the most common non-carious dental diseases characterized by the irreversible loss of mineralized tooth hard tissues in the absence of bacterial involvement. In recent years, the increasing consumption of acidic foods and beverages, gastroesophageal reflux disease (GERD), eating disorders, and changes in lifestyle have contributed to a significant rise in the prevalence of this condition. According to recent meta-analyses, the global prevalence of tooth wear is approximately 40.8%, while erosive tooth wear affects 20–40% of children and adolescents and up to 30–50% of adults.

This review analyzes current scientific evidence regarding the etiology, pathogenesis, risk factors, and preventive approaches to dental enamel erosion. The effects of endogenous and exogenous acidic factors on enamel demineralization, the protective role of saliva, and impairment of the remineralization process are discussed as the principal pathogenetic mechanisms underlying disease development. In addition, the clinical significance of early diagnosis, individual risk assessment, and preventive strategies based on fluoride preparations, calcium-phosphate compounds, and dietary modification is highlighted. The available evidence suggests that a comprehensive preventive approach, risk-based patient stratification, and regular dental monitoring play a crucial role in reducing the incidence and progression of dental enamel erosion.

**Keywords:** dental enamel erosion, enamel demineralization, erosive tooth wear, etiology, pathogenesis, prevention, remineralization, dentistry.

## Introduction

Dental enamel erosion is one of the major challenges in modern dentistry and is characterized by the irreversible loss of mineralized tooth hard tissues in the absence of bacterial involvement. Over the past decades, changes in dietary habits, increased consumption of acidic beverages and carbonated drinks, gastroesophageal reflux disease (GERD), gastrointestinal disorders, and other adverse lifestyle factors have contributed to a substantial increase in the prevalence of this condition. Today, dental enamel erosion is regarded not only as an aesthetic concern but also as a clinically significant disorder that directly affects tooth function, masticatory efficiency, and patients' quality of life.

According to the World Health Organization (WHO) and international dental organizations, oral diseases affect nearly 3.5 billion people worldwide, among whom dental erosion and other non-carious

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tooth lesions are being reported with increasing frequency. Recent meta-analyses indicate that the prevalence of erosive tooth wear exceeds 30% among children and adolescents and approaches 50% in certain populations. A continuous increase has also been observed among adults, particularly in association with acidic dietary habits and chronic gastrointestinal diseases. These findings highlight that dental enamel erosion should be considered not only a dental condition but also a multidisciplinary healthcare issue requiring collaboration among dental and medical professionals.

The pathogenesis of dental enamel erosion involves complex biological processes in which acids acting on the enamel surface induce the demineralization of hydroxyapatite crystals. The rate and severity of this process depend on several factors, including the pH of the acidic agent, the duration of acid exposure, salivary flow rate and buffering capacity, as well as individual metabolic characteristics. When the physiological balance between demineralization and remineralization is disrupted, the enamel microstructure deteriorates, resulting in reduced mechanical strength and the gradual development of clinical manifestations of erosion. Furthermore, the coexistence of erosive wear with abrasion and attrition may considerably accelerate the loss of dental hard tissues.

Despite these advances, early diagnosis of dental enamel erosion and its differential diagnosis from dental caries and other non-carious lesions remain important challenges in clinical dentistry. In many patients, the disease progresses asymptomatically during its initial stages, leading to delayed diagnosis and limiting the effectiveness of conservative treatment. Although significant progress has recently been achieved in diagnostic technologies, preventive dentistry, and remineralization therapy, further research is still needed to improve comprehensive risk assessment and develop individualized preventive strategies.

The present review systematically analyzes the latest scientific evidence regarding the etiology, pathogenetic mechanisms, contemporary diagnostic approaches, and preventive strategies for dental enamel erosion. In addition, the interaction between endogenous and exogenous risk factors, current diagnostic challenges encountered in clinical practice, and the effectiveness of modern preventive interventions are critically evaluated based on contemporary scientific literature.

Dental enamel erosion

Dental enamel erosion is a pathological process characterized by the gradual demineralization of enamel—the outermost and hardest tissue of the tooth—caused by chemical agents in the absence of bacterial involvement. Under acidic conditions, hydroxyapatite crystals within the enamel dissolve progressively, resulting in a reduction in its mechanical strength and protective function. As the disease advances, the enamel surface becomes smoother, the anatomical contours of the tooth are altered, and, if left untreated, the process may eventually expose the underlying dentin.

Dental enamel erosion is classified as a non-carious lesion and differs fundamentally from dental caries in terms of its etiology. While dental caries results from acids produced by bacterial metabolism within dental biofilm, enamel erosion develops through the direct action of acids originating from either exogenous or endogenous sources. Therefore, accurate early diagnosis and differential diagnosis are of considerable importance in clinical dental practice.

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In recent years, scientific interest in dental enamel erosion has increased substantially. This is primarily due to the recognition that the condition not only produces aesthetic defects but also compromises tooth function, masticatory efficiency, and patients' oral health-related quality of life. Furthermore, enamel erosion frequently coexists with other forms of non-carious tooth surface loss, such as abrasion and attrition, making clinical management more complex and requiring an individualized therapeutic approach.

A comprehensive understanding of the mechanisms underlying enamel erosion, together with early identification of risk factors and timely implementation of preventive measures, is essential for preserving dental hard tissues over the long term. Consequently, dental enamel erosion is currently recognized as one of the most significant scientific and clinical challenges in contemporary preventive and restorative dentistry [[1]].

Epidemiology

Dental enamel erosion is currently recognized as one of the most prevalent non-carious dental conditions, with its global prevalence continuing to increase. Over recent decades, changes in dietary habits, increased consumption of acidic beverages and processed foods, together with the growing prevalence of gastrointestinal disorders, have substantially contributed to the rising incidence of this condition. Contemporary epidemiological studies indicate that erosive tooth wear is becoming increasingly common not only among adults but also among children and adolescents.

The prevalence of dental enamel erosion varies considerably among different populations and is influenced by age, sex, dietary habits, socioeconomic status, and environmental factors. Studies conducted in developed countries have demonstrated a higher prevalence among individuals with frequent consumption of carbonated soft drinks, sports beverages, citrus fruits, and other acidic foods. In children and adolescents, erosive lesions are primarily associated with unhealthy dietary behaviors, whereas in adults, gastroesophageal reflux disease (GERD), prolonged use of certain medications, eating disorders, and occupational exposure to acidic environments represent important epidemiological risk factors.

Recent international evidence indicates that the prevalence of erosive tooth wear ranges from approximately 30–35% among children and adolescents, reaching nearly 50% in some populations. Among adults, reported prevalence varies between 20% and 45%, with both the severity and extent of enamel loss increasing with age due to cumulative exposure to acidic challenges throughout life.

These epidemiological findings demonstrate that dental enamel erosion has become a major public health concern in contemporary dentistry. Therefore, understanding its epidemiological characteristics, identifying high-risk populations, and developing effective preventive strategies are

[1] Schlueter N, Amaechi BT, Bartlett D, et al. Terminology of Erosive Tooth Wear: Consensus Report of a Workshop Organized by the ORCA and the Cariology Research Group of the IADR. Caries Research. 2020;54(1):2–6.

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essential for improving oral healthcare outcomes and reducing the long-term burden of erosive tooth wear [2].

Etiology

Dental enamel erosion is a multifactorial condition resulting from the combined effects of both exogenous and endogenous factors. In most cases, the disease does not develop as a consequence of a single causative agent but rather arises from the prolonged interaction of multiple risk factors. Therefore, comprehensive patient assessment should include not only dental examination but also evaluation of dietary habits, systemic health status, medication history, and lifestyle-related factors.

Among the exogenous factors, frequent consumption of acidic foods and beverages is considered one of the principal etiological determinants. Carbonated soft drinks, energy drinks, fruit juices, citrus fruits, sports beverages, and foods containing organic acids contribute to enamel demineralization by lowering the pH of the oral environment. The risk of enamel erosion is particularly increased when these products are consumed repeatedly throughout the day or retained in the oral cavity for prolonged periods, thereby extending the duration of acid exposure.

Endogenous factors also play a significant role in the development of dental enamel erosion. Gastroesophageal reflux disease (GERD), chronic vomiting, bulimia nervosa, and pregnancy-related hyperemesis expose the teeth to gastric acid, resulting in severe chemical dissolution of enamel. Because gastric acid has a very low pH, enamel demineralization associated with endogenous acid exposure may progress more rapidly than that caused by dietary acids.

Saliva represents another critical etiological factor due to its protective role in maintaining enamel integrity. Reduced salivary flow, decreased buffering capacity, and insufficient concentrations of calcium and phosphate ions impair the natural remineralization process, thereby increasing susceptibility to erosive tooth wear. Furthermore, long-term use of certain medications associated with xerostomia, habitual mouth breathing, and occupational exposure to acidic vapors have also been recognized as important contributors to enamel erosion.

Overall, the etiology of dental enamel erosion is complex and involves the interaction of multiple biological, behavioral, and environmental factors. Early identification of these etiological determinants is essential for risk assessment, prevention, and the development of individualized management strategies aimed at minimizing the progression of erosive tooth wear [2].

Pathogenesis

The pathogenesis of dental enamel erosion involves a complex series of biological and chemical processes characterized by the progressive dissolution of the mineral components of enamel following exposure to acidic conditions. Healthy enamel is composed predominantly of hydroxyapatite crystals,

[2] Marschner F, Kanzow P, Wiegand A. *Anamnestic risk factors for erosive tooth wear: Systematic review, mapping, and meta-analysis*. Journal of Dentistry. 2024;144:104962.

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and its structural integrity is maintained through a dynamic balance between demineralization and remineralization. When this physiological equilibrium is disrupted by repeated or prolonged acid exposure, mineral loss exceeds remineralization, initiating the erosive process.

The critical pH for enamel dissolution is approximately 5.5. When the oral environment falls below this threshold, hydroxyapatite crystals begin to dissolve, releasing calcium and phosphate ions into the surrounding medium. Repeated episodes of acid challenge progressively reduce enamel microhardness, soften the enamel surface, and increase its susceptibility to mechanical wear. Although these early changes are often clinically undetectable, continued demineralization ultimately leads to enamel thinning, loss of surface morphology, and irreversible structural damage.

Saliva plays a fundamental role in protecting enamel against erosive challenges. It neutralizes acids through its buffering capacity, forms the acquired salivary pellicle that acts as a protective diffusion barrier, and supplies calcium and phosphate ions necessary for enamel remineralization. Consequently, reduced salivary flow rate, impaired buffering capacity, or alterations in salivary composition significantly weaken the natural defense mechanisms of enamel and accelerate the progression of dental erosion.

As the disease progresses, the erosive process extends beyond the enamel into the underlying dentin. Once dentin becomes exposed, its organic collagen matrix is subjected to degradation by proteolytic enzymes, leading to accelerated loss of dental hard tissues. Clinically, this stage is frequently associated with dentin hypersensitivity, increased susceptibility to mechanical wear, and the need for restorative intervention. Therefore, early detection of enamel demineralization and timely interruption of the erosive process are essential for preserving tooth structure and preventing irreversible tissue loss [3].

Clinical Manifestations

The clinical presentation of dental enamel erosion varies depending on the duration of the disease, the severity of tissue loss, and the intensity of the underlying etiological factors. During the early stages, most patients remain asymptomatic, and erosive lesions are frequently detected incidentally during routine dental examinations. Initially, the enamel loses its natural luster and develops a smooth, silky-glazed, and slightly dull appearance. Although mineral loss at this stage is microscopic, the protective properties of enamel have already begun to deteriorate.

As the erosive process progresses, shallow saucer-shaped or cupped defects become evident on the enamel surface. These lesions are most commonly observed on the middle third of the labial surfaces of the maxillary anterior teeth and on the occlusal surfaces of premolars and molars. Progressive enamel thinning results in the gradual loss of normal anatomical contours, increased translucency of the incisal edges, and a yellowish discoloration of the teeth due to the underlying dentin becoming increasingly visible.

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[3] Lussi A, Carvalho TS. *Erosive Tooth Wear: A Multifactorial Condition of Growing Concern and Increasing Knowledge.* Monographs in Oral Science. 2014;25:1–15.

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One of the most characteristic clinical manifestations of advanced enamel erosion is dentin hypersensitivity. Following the loss of the protective enamel layer, dentinal tubules become exposed to the oral environment, resulting in sharp, transient pain triggered by thermal, osmotic, tactile, or chemical stimuli, including cold, hot, sweet, or acidic foods and beverages, as well as toothbrushing. Hypersensitivity may significantly impair patients' dietary habits and negatively affect their oral health-related quality of life.

With further progression, substantial morphological changes occur. The clinical crowns of anterior teeth become shorter due to incisal wear, while the cusps of posterior teeth gradually flatten, leading to alterations in occlusal morphology and masticatory function. These structural changes may also contribute to occlusal instability and adversely affect temporomandibular joint function. In addition, visible aesthetic deterioration may cause psychological distress, reduced self-confidence, and social discomfort in affected individuals.

The distribution of erosive lesions may provide valuable information regarding their underlying etiology. In patients with gastroesophageal reflux disease (GERD), lesions predominantly affect the palatal surfaces of the maxillary teeth because of repeated exposure to gastric acid. Conversely, individuals with frequent consumption of acidic beverages typically exhibit erosive defects on the labial or buccal surfaces. Occupational acid exposure often produces symmetrical lesions involving multiple groups of teeth. Therefore, the anatomical location and pattern of tooth surface loss represent important diagnostic indicators during clinical examination.

In advanced stages, extensive enamel loss results in widespread dentin exposure. Because dentin is considerably softer and less mineralized than enamel, it is more susceptible to abrasion and attrition, accelerating the destruction of dental hard tissues. Consequently, crown height decreases, occlusal surfaces become severely deformed, and normal occlusal relationships are compromised. Patients with advanced erosive tooth wear frequently require comprehensive restorative rehabilitation and, in severe cases, prosthodontic treatment.

In summary, the clinical manifestations of dental enamel erosion progress gradually as the disease advances. Early recognition of initial clinical signs, combined with timely elimination of etiological factors, is essential for preventing further tissue destruction and preserving both the structural integrity and functional performance of the dentition [4].

Diagnosis

Early diagnosis of dental enamel erosion is essential for preventing disease progression and establishing an effective treatment strategy. Because the initial stages of enamel erosion are often clinically subtle, accurate diagnosis requires a comprehensive assessment that includes the patient's medical and dietary history, detailed clinical examination, and, when appropriate, adjunctive diagnostic methods. The diagnostic process aims to determine the location, severity, extent, and possible etiological factors associated with erosive tooth wear.

[4] Bartlett D, O'Toole S. *Tooth Wear and Preventive Care*. Dental Clinics of North America. 2023;67(2):181–196.

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A thorough medical and dental history represents one of the most important components of the diagnostic process. Clinicians should obtain detailed information regarding the patient's dietary habits, frequency of consumption of acidic foods and beverages, intake of carbonated drinks, lifestyle factors, medication use, and oral hygiene practices. Particular attention should also be paid to the presence of gastroesophageal reflux disease (GERD), gastrointestinal disorders, bulimia nervosa, chronic vomiting, xerostomia, and other systemic conditions that may increase the risk of enamel erosion. These data are fundamental for identifying the underlying etiology and establishing an appropriate differential diagnosis.

Clinical examination should include a systematic evaluation of all tooth surfaces under adequate illumination and a dry operating field. In the early stages, enamel typically exhibits loss of its natural surface gloss, a smooth silky appearance, and flattening of normal anatomical contours. As the disease progresses, saucer-shaped defects, thinning of incisal edges, dentin exposure, and yellowish discoloration become increasingly evident. Dentin hypersensitivity should also be assessed using air, cold stimuli, or gentle probing, as hypersensitivity is one of the most characteristic clinical manifestations of advanced enamel erosion.

The Basic Erosive Wear Examination (BEWE) index is currently the most widely accepted clinical tool for grading erosive tooth wear. Using this scoring system, the dentition is divided into sextants, and the most severely affected tooth surface in each sextant is assigned a score. The cumulative BEWE score enables clinicians to determine disease severity, stratify patient risk, and develop individualized preventive and therapeutic management plans. The simplicity, reproducibility, and practicality of the BEWE index make it suitable for both routine clinical practice and longitudinal monitoring.

Differential diagnosis is crucial because dental enamel erosion shares certain clinical features with other non-carious tooth surface lesions. Attrition is characterized by tooth wear resulting from tooth-to-tooth contact, producing flat matching wear facets. Abrasion is associated with external mechanical forces, such as improper toothbrushing techniques or abrasive oral hygiene products. Abfraction typically presents as wedge-shaped cervical defects caused by biomechanical stress concentration, whereas dental caries involves bacterial-mediated demineralization accompanied by localized destruction of dental hard tissues. Careful evaluation of lesion morphology, location, and patient history is therefore essential for establishing an accurate diagnosis.

Adjunctive diagnostic techniques, including standardized clinical photography, intraoral digital scanning, study models, and digital monitoring systems, have become increasingly valuable in contemporary dental practice. Recent advances in three-dimensional intraoral scanning technology enable clinicians to detect minimal changes in tooth surface morphology and quantitatively monitor lesion progression over time. These technologies facilitate objective assessment of treatment outcomes and improve long-term surveillance of patients at high risk for erosive tooth wear.

Overall, the diagnosis of dental enamel erosion extends beyond simple clinical observation and requires a comprehensive approach integrating patient history, standardized clinical indices, differential diagnosis, and modern digital diagnostic technologies. Early detection and timely

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identification of etiological risk factors remain fundamental for improving treatment outcomes and preventing further irreversible loss of dental hard tissues [5].

Treatment

The primary objectives in the management of dental enamel erosion are to eliminate or minimize the causative factors, prevent further mineral loss, preserve the remaining dental hard tissues, restore function and aesthetics when necessary, and improve the patient's overall oral health. The treatment strategy should be selected individually according to the severity of the lesion, the extent of tissue destruction, and the underlying etiological factors. Therefore, comprehensive clinical examination and identification of the causative factors are essential before initiating treatment.

The first stage of treatment focuses on eliminating etiological factors. Patients should be advised to reduce the frequency of consuming acidic foods and beverages, including carbonated drinks, citrus fruits, and products containing organic acids. When enamel erosion is associated with systemic conditions such as gastroesophageal reflux disease, endocrine disorders, or other medical conditions, interdisciplinary management involving the appropriate medical specialists is recommended. Without eliminating the underlying cause, local dental treatment alone is unlikely to provide long-term clinical success.

In the early stages of enamel erosion, conservative treatment remains the method of choice. Remineralization therapy is recommended to enhance the mineral content and acid resistance of enamel. Preparations containing fluoride, calcium, and phosphate compounds, including fluoride varnishes, gels, and remineralizing agents, are commonly used to reduce enamel demineralization and alleviate dentin hypersensitivity. Patients should also receive instructions on maintaining proper oral hygiene, including the use of soft-bristled toothbrushes and low-abrasive fluoride toothpaste to minimize additional mechanical wear.

When erosive lesions result in significant loss of dental hard tissues, restorative treatment becomes necessary. Depending on the extent of tissue destruction, direct composite restorations, aesthetic veneers, or indirect prosthetic restorations may be indicated. The choice of restorative approach should consider the patient's age, functional requirements, aesthetic expectations, and overall oral condition. In advanced cases, restoration of tooth morphology, occlusal function, and aesthetics represents the primary therapeutic objective.

Following completion of treatment, patients should be enrolled in a regular follow-up program. Periodic dental examinations, repeated remineralization therapy when indicated, reinforcement of oral hygiene instructions, and continuous control of etiological factors are essential for preventing recurrence and maintaining long-term treatment outcomes. Patient compliance with professional

[5] Rius-Bonet O, Roca-Obis P, Zamora-Olave C, et al. *Diagnostic Accuracy of Clinical Signs to Detect Erosive Tooth Wear in Its Early Phase*. Journal of Oral Rehabilitation. 2024;51(5):861–869.

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recommendations plays a decisive role in preserving dental hard tissues and ensuring the long-term success of therapy [6].

Prevention

Prevention of dental enamel erosion is one of the key priorities in contemporary dentistry, aiming to minimize enamel demineralization, reduce exposure to risk factors, and preserve the structural and functional integrity of teeth over the long term. Preventive strategies are generally classified into primary and secondary prevention. Primary prevention focuses on reducing the risk of disease development in healthy individuals, whereas secondary prevention is directed toward preventing the progression of erosive lesions in patients with early clinical signs of enamel erosion.

One of the most important preventive measures is the promotion of healthy dietary habits. Patients should be advised to limit the consumption of carbonated beverages, energy drinks, citrus fruits, fruit juices, and other foods and drinks with a high content of organic acids. Frequent exposure to these acidic products significantly increases enamel demineralization. After consuming acidic foods or beverages, rinsing the mouth with water is recommended, while toothbrushing should be postponed for at least 30–60 minutes. This interval allows saliva to neutralize the acidic environment and facilitate the natural remineralization of the enamel surface.

Proper oral hygiene is another essential component of prevention. The use of soft-bristled toothbrushes, low-abrasive toothpastes, and appropriate toothbrushing techniques helps minimize additional mechanical damage to weakened enamel. Fluoride-containing toothpastes, topical fluoride applications, and remineralizing agents are recommended to enhance enamel resistance to acid attacks and promote the restoration of mineral content.

Management of systemic conditions associated with enamel erosion is equally important. Early diagnosis and appropriate treatment of gastroesophageal reflux disease (GERD), gastrointestinal disorders, eating disorders, and other systemic diseases can significantly reduce endogenous acid exposure and lower the risk of progressive enamel destruction. Regular dental examinations are particularly important for individuals at increased risk, allowing early detection of erosive lesions and timely implementation of preventive interventions. Ultimately, the long-term success of preventive strategies depends largely on patient adherence to professional recommendations and the maintenance of a healthy lifestyle [7].

Prognosis

[6] Rizayev JA. *Terapevtik stomatologiya*. Darslik. Toshkent: Hilol Media; 2023.

[7] Komilov H, Ibragimova M, Rustamova D, et al. *Propedeutics of Therapeutic Dentistry*. Tashkent: Yangi Asr Avlodi; 2006.

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The prognosis of dental enamel erosion depends primarily on the stage at which the disease is diagnosed, the extent of hard tissue loss, the patient's general health status, and adherence to recommended treatment and preventive measures. When enamel erosion is identified in its early stages and the underlying etiological factors are promptly eliminated, disease progression can usually be arrested, allowing preservation of the structural integrity and functional capacity of the affected teeth. In such cases, regular dental follow-up combined with remineralization therapy generally provides favorable long-term clinical outcomes.

In advanced stages, however, substantial enamel loss, dentin exposure, and alteration of normal tooth morphology are commonly observed. These changes may lead to impaired masticatory function, increased dentin hypersensitivity, and significant aesthetic concerns, thereby negatively affecting the patient's oral health-related quality of life. Consequently, patients with advanced erosive lesions often require restorative or prosthodontic rehabilitation to restore tooth morphology, function, and esthetics.

Following completion of treatment, patients should undergo periodic dental examinations and maintain optimal oral hygiene practices. Strict adherence to preventive recommendations, including dietary modification, control of systemic risk factors, and regular application of remineralizing agents when indicated, is essential for minimizing the risk of recurrence. If the underlying etiological factors persist, progressive enamel destruction and the development of new erosive lesions remain likely despite previous treatment.

Overall, the prognosis of dental enamel erosion is generally favorable when early diagnosis, comprehensive management, and effective prevention are achieved. Timely dental intervention, together with long-term patient compliance and regular professional monitoring, plays a crucial role in preserving the anatomical integrity, functional performance, and aesthetic appearance of the dentition [[8]].

Discussion

The literature reviewed in this study indicates that dental enamel erosion has become not only an important dental condition but also a growing public health concern. Contemporary evidence demonstrates that changes in dietary habits, increased consumption of carbonated beverages and energy drinks, as well as the rising prevalence of gastrointestinal disorders, are among the principal factors contributing to the increasing incidence of enamel erosion. In particular, frequent intake of acidic beverages among adolescents and young adults has been consistently associated with accelerated enamel demineralization and a higher risk of erosive tooth wear.

The findings reported in national publications are consistent with those of international studies. In a literature review by Ergashev B.J., it was emphasized that the organic acids and high sugar content of energy drinks adversely affect the mineral composition of dental enamel. The author also noted that uncontrolled and frequent consumption of energy drinks, especially among adolescents and university students, may contribute significantly to the increasing prevalence of non-carious dental lesions, including enamel erosion [9].

[8] Rizayev JA, et al. *Stomatologiya*. Study Guide. Tashkent: Lesson Press; 2018.

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The analyzed evidence further suggests that effective prevention of dental enamel erosion extends beyond restorative dental treatment alone. Establishing healthy dietary habits, limiting the intake of acidic beverages, maintaining proper oral hygiene, and attending regular dental examinations are fundamental strategies for reducing disease incidence and slowing its progression. Moreover, patient education regarding modifiable risk factors should be considered an integral component of preventive dental care.

Overall, the reviewed scientific evidence confirms that dental enamel erosion is a multifactorial disease whose successful management requires a multidisciplinary approach involving dentists, physicians, and active patient participation. The implementation of evidence-based preventive strategies together with improved public awareness and oral health education may substantially reduce the prevalence and clinical consequences of dental enamel erosion [9].

Conclusion

Dental enamel erosion is a progressive non-carious lesion characterized by irreversible demineralization of dental hard tissues under the influence of various exogenous and endogenous factors. The analysis of the available literature indicates that frequent consumption of acidic foods and beverages, particularly energy drinks, gastroesophageal reflux disease (GERD), unhealthy dietary habits, and inadequate oral hygiene are among the principal etiological factors associated with the development of this condition.

Early diagnosis of dental enamel erosion and the application of contemporary diagnostic methods are essential for preventing further progression of the disease. Successful clinical management requires identification and elimination of etiological factors, implementation of remineralization therapy, restorative treatment when indicated, and continuous follow-up through regular dental examinations. Such a comprehensive approach contributes to preserving dental hard tissues, restoring oral function, and improving aesthetic outcomes.

Furthermore, adherence to preventive strategies—including the promotion of healthy dietary habits, limitation of acidic and energy drink consumption, maintenance of proper oral hygiene, and regular dental check-ups—plays a crucial role in reducing the incidence and progression of dental enamel erosion. Increasing public awareness regarding modifiable risk factors should also be considered an important component of preventive oral healthcare.

In conclusion, effective management of dental enamel erosion relies on the integration of early diagnosis, evidence-based treatment, and comprehensive preventive measures. The implementation of these strategies in routine dental practice is essential for preserving oral health, preventing long-term complications, and improving patients' quality of life

[9] Ergashev BJ. *Energetik ichimliklarning tish emal qavatiga ta'siri va oldini olish usullari (adabiyotlar sharhi).* Ilmiy tadqiqotlar va ularning yechimlari jurnali. 2025.

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