Periodontal Health in Eating Disorders: A Nutritional and Clinical Assessment

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Abstract

Eating disorders such as anorexia nervosa, bulimia nervosa, and binge eating disorder have profound impacts on systemic and oral health.

While the metabolic and psychological consequences are well documented, the effects on periodontal tissues remain under-explored.

This text offers an exhaustive assessment of how disordered eating patterns impact periodontal structures, emphasizing systemic inflammation, nutritional deficiencies, salivary changes, and microbiome imbalances. Emphasis is placed on how **nutritional monitoring** tools—designed to regulate caloric intake—intersect with oral health through behavior modification, restriction cycles, and malnutrition.

Clinical manifestations are described in detail, and global epidemiological data are integrated to offer a holistic perspective.

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1. Introduction

The rising prevalence of eating disorders (EDs) across industrialized and emerging nations has prompted broader clinical investigations into their systemic ramifications. According to the World Health Organization (WHO), over **9% of the global population** suffers from some form of eating disorder, with peak onset between **ages 15 and 24** (WHO, 2022). Countries with high urbanization and diet-conscious cultures, such as **Japan**, **Sweden**, and the **United States**, exhibit particularly high incidence rates.

Nutrition management tools—such as portion-control systems, dietary journals, and meal-timing plans—have become commonplace methods for managing caloric intake, especially among adolescents and young adults. While these tools aim to instill healthful dietary awareness, they can also reinforce maladaptive restriction behaviors in at-risk individuals. This interplay directly

influences periodontal health, a domain heavily reliant on nutritional sufficiency and immune competence.

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2. Overview of Common Eating Disorders and Nutritional Implications

2.1 Anorexia Nervosa (AN)

Defined by severe caloric restriction, AN leads to protein-energy malnutrition, commonly resulting in osteopenia, immune suppression, and micronutrient deficiencies. Studies from the **Karolinska Institute (Sweden)** revealed that **72%** of patients with anorexia nervosa exhibit decreased serum calcium and vitamin D—both essential for alveolar bone integrity (Lindqvist et al., 2019).

2.2 Bulimia Nervosa (BN)

Characterized by binge-purge cycles, BN results in chronic exposure of oral tissues to gastric acid due to self-induced vomiting. The **University of Sydney (Australia)** documented that **65%** of bulimic patients displayed signs of dental erosion and periodontal bleeding (Roberts-Thomson et al., 2017).

2.3 Binge Eating Disorder (BED)

Marked by recurrent episodes of uncontrolled eating, BED is commonly associated with obesity, insulin resistance, and low-grade systemic inflammation. **NIH-funded research** in the **U.S.** showed increased serum TNF-α and IL-6 in BED patients, which have been linked to periodontal tissue breakdown (Mehler & Brown, 2020).

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3. Periodontal Manifestations of Eating Disorders

Clinical Sign	Anorexia Nervosa	Bulimia Nervosa	Binge Eating Disorder
Gingival inflammation	Moderate	Severe	Moderate
Periodontal pocketing	Shallow	Deep (esp. molars)	Moderate to deep
Alveolar bone loss	Yes (osteopenia-related)	Yes (acid erosion-related)	Yes (inflammation-mediated)

Salivary flow (xerostomia)	Decreased	Variable	Normal or increased
Enamel erosion	Mild	Severe	Mild
Halitosis	Yes	Yes	Yes

Sources: Royal College of Surgeons (UK), Journal of Clinical Periodontology, ADA Clinical Review 2023

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4. Nutritional Deficiencies and Their Periodontal Consequences

- **Vitamin C** deficiency (common in AN) impairs collagen synthesis, delaying healing post-scaling or surgery. First reported by Dr. Harriet S. Gill at **UCLA School of Dentistry** in 2003.
- **Calcium and Vitamin D** depletion leads to alveolar bone resorption. A **German cohort study** (n=486, University of Heidelberg) showed 2x higher clinical attachment loss in patients with hypovitaminosis D.
- **Iron Deficiency Anemia** affects immune response. The **Indian Council of Medical Research (ICMR)** observed periodontal bleeding in **84%** of iron-deficient females with AN.

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5. Immune Dysregulation and Inflammation in EDs

Chronic nutrient insufficiency and binge-purge behaviors alter the cytokine milieu, leading to:

- Elevated **TNF-α** and **IL-6** (pro-inflammatory)
- Decreased **IL-10** (anti-inflammatory)

Research from **Sapienza University of Rome** in 2021 linked increased inflammatory burden in ED patients with deep periodontal pockets and bleeding on probing scores ≥3 in **66%** of subjects (Boccardi et al.).

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6. Role of Salivary Glands and Enzymes

Saliva, crucial for neutralizing acids and protecting soft tissues, is often altered in EDs:

- BN results in **parotid gland enlargement** and enzymatic shifts.
- AN leads to **xerostomia**, with reduced amylase and lysozyme levels.

The **Tokyo Dental College** found that **45%** of Japanese ED patients exhibited significant salivary flow reduction (Yamamoto et al., 2018).

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7. Psychological and Behavioral Correlates Affecting Periodontal Care

- **Dental avoidance**: Fear of judgment leads to reduced visits.
- **Tooth brushing after purging**: Common in BN, it exacerbates erosion.
- **High intake of sugary "safe foods"** during binge episodes in BED patients accelerates plaque formation.

The **American Psychiatric Association** noted that **only 30%** of patients with EDs receive routine dental assessments (2022).

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8. Public Health and Global Perspectives

- In **South Korea**, dietary restraint among high school students correlates with higher rates of periodontal inflammation (Seoul National University, 2020).
- **Brazil's National Health Survey (PNS)** linked eating disorders to increased periodontitis prevalence in urban populations.
- **Canada's McGill University** is investigating national dental screening protocols for ED patients.

9. Clinical Recommendations

- Incorporate **dietary screening** into periodontal assessment.
- Emphasize **collaboration with nutritionists and mental health providers**.
- Provide **fluoride rinses**, **calcium supplements**, and **pH-balancing therapies**.
- Avoid abrasive products post-purge and recommend **neutralizing rinses** (e.g., water, baking soda solution).

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10. Conclusion

Eating disorders present a complex interplay of nutritional, psychological, and systemic factors that critically affect periodontal health. Nutritional tools, while helpful in dietary control, can also facilitate disordered behaviors that compromise oral integrity. Clinicians must be vigilant in recognizing signs of EDs and integrating interdisciplinary care approaches. As oral health professionals, periodontists have a unique role in early detection and supportive management.

References

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