



Review

## EATING DISORDERS AND ORAL HEALTH STATUS

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### ABSTRACT

Eating disorders (EDs) represent a group of multiple pathological conditions defined in psychiatric classifications as “severe mental illness”, which require specialized treatments with an integrated multidisciplinary approach due to their multifactorial origin. Nutrition and EDs are divided as follows: a) anorexia nervosa; b) bulimia nervosa; c) binge-eating disorder; d) avoidant/restrictive food intake disorder; e) rumination disorder; f) pica; g) other specific disorders of nutrition; h) unspecified nutrition and EDs. The qualitative and quantitative modifications of the food introduced daily also involve manifestations affecting the oral cavity. Consequently, an individual suffering from ED with an altered diet will have insufficient nutrition and compromised overall health. This work aims to provide a general view of EDs and the effects on oral health resulting from EDs.

**KEYWORDS:** *food intake, weight, nutrition, eating disorders, oral health*

### INTRODUCTION

Eating Disorders (Eds) are defined and classified by the American Psychiatric Association in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders as persistent EDs and/or behaviours aimed at weight control, which deteriorate physical health and psychosocial functioning and are not secondary to any known medical or psychiatric conditions. They represent a group of multiple pathological conditions defined in psychiatric classifications as “severe mental illness”, which, as such, require specialized treatments with an integrated multidisciplinary approach due to their multifactorial origin. They tend to have a prolonged course and become chronic in 20-30% of cases. These disorders frequently occur in comorbidity with other mental disorders (30-50% anxiety disorders, depression, suicide, addiction), and the risk of suicide is very high in these cases (1, 2).

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Although the typical age of onset is between 15-19 years, in some cases, it can affect subjects of younger and older ages. Studies have been conducted on the epidemiology and treatment of EDs in middle-aged and older women and men. It was found that EDs also occur in both sexes over 40 years of age. Although the occurrence of EDs (especially anorexia nervosa) is lower among older women than among young women, health professionals should consider the possibility of an ED even among older people. However, it is difficult to identify the disorder due to age-dependent symptoms, an underestimation of patients regarding the symptoms of the ED, which could be due to shame, stigmatization of psychiatric disorders even by the doctor, and the fact that the ED is often hidden behind excessive sporting activity (3, 4).

In the DSM-5, nutrition and EDs are divided as follows: a) anorexia nervosa (AN); b) bulimia nervosa (BN); c) binge-eating disorder; d) avoidant/restrictive food intake disorder; e) rumination disorder; f) pica; g) other specific disorders of nutrition and nutrition; h) unspecified nutrition and EDs (1).

The risk factors can be divided into predisposing and triggering. Both are divided into:

- Individuals: genetic, physical (discomfort for physical fitness), psychological (low self-esteem, perfectionism, anxiety, emotional difficulty, etc.), socio-cultural (pressure on thinness, dieting, etc.), and concomitant diseases.

- Family: educational styles based on beauty, bereavement, a tendency to hide problems and difficulties between family members, separations and/or conflicts and therefore alterations in the family balance.

- Cultural: the cult of the image, new ideals of beauty and thinness, and new performance styles to conform to a model proposed by social media, which propagate an unrealistic ideal of beauty, leading to dissatisfaction with one's body (2,5).

Acquiring a balanced diet is an essential prophylactic and protection tool for multiple diseases. However, the qualitative and quantitative modifications of the food introduced daily also involve manifestations affecting the oral cavity. Consequently, an individual suffering from ED with an altered diet will have insufficient nutrition, compromising the organism's overall health.

This work aims to provide a general view of EDs, deepening some particular elements and focusing on the effects on oral health resulting from EDs.

## MATERIALS AND METHODS

Based on the literature, a narrative review was created that describes various aspects of EDs, particularly the alterations resulting from the wrong habits deriving from the oral cavity disorder. The research of the articles was carried out using Pubmed, WOS, and Scopus scientific databases. It was used as a search string terms related to EDs, such as "eating disorders", "eating behaviour", "epidemiology", "EDs and oral cavity", and "physical fitness".

## RESULTS

The following data emerged from the epidemiological research regarding anorexia nervosa:

- The prevalence among European women is <1-4%, and the male/female ratio is 1:10.

- The incidence is equal to 8.1 cases per 100,000 inhabitants/year.

- Some studies imply that in Europe, there has been an increase in anorexia rates, probably due to better detection, while bulimia is on the decline (6).

- For bulimia nervosa, the prevalence is <1-2%, with a male-female ratio of 1:20, while the incidence is 11.4 per 100,000 inhabitants/year (2, 7).

Bulimic crises occur after the loss of balance in respecting rigid and extreme self-imposed limits, from states of dysphoric mood, conflicts, stressful events, feelings of emptiness, and loneliness (8).

## DISCUSSION

Rumination syndrome is a gastrointestinal function characterized by effortless postprandial reflux. The material can be chewed and swallowed or expectorated by the patient. Generally, regurgitation is not preceded by nausea or retching. Repeated regurgitation is not caused by an associated gastrointestinal condition or another medical condition (for example,

gastroesophageal reflux). They usually tend to limit their food consumption in order to prevent others from seeing them regurgitate. In 40% of cases, this is related to weight loss and/or developing nutritional deficiencies. Continuous food regurgitation must occur for at least one month to diagnose rumination disorder. Unlike vomiting, which is an energetic expulsion usually caused by an ailment, regurgitation is not an energetic expulsion and can be involuntary. The subject may report being unable to stop doing it (9, 10).

Pica is the compulsive consumption of non-nutritive substances (chalk, eraser, hair, pen, and pencil) for at least one month. The frequency is higher in pregnant women and preteens, and numerous studies in the literature report a correlation between iron deficiency and pica. However, the pathophysiology is still unknown, and the bases presumably are sought in the decrease in iron levels in the central nervous system (11, 12).

In addition to harming physical and psychosocial health, EDs also have severe consequences for oral health. Oral signs and symptoms of ED are generally caused by nutritional deficiencies and/or a long history of self-induced vomiting. However, inadequate personal hygiene, inappropriate eating habits, and medications can worsen the condition. The primary oral diseases attributable to EDs are dental erosion and dental caries. Dental erosion (the predominant oral characteristic of ED) is a pathological and chronic multifactorial process that causes irreversible enamel dissolution. It can continue until the pulp is exposed, resulting in the appearance of dental sensitivity, aesthetic impairment, and loss of vertical size.

Erosion is mainly attributable to repeated episodes of self-induced vomiting (characteristic of AN, BN, and Rumination syndrome), the persistence of the gastric acid content in the oral cavity, and changes in saliva's qualitative and quantitative characteristics (xerostomia, impaired buffering capacity, and salivary pH). Therefore, the erosive damage is due to the repeated presence of gastric juice inside the oral cavity with a pH <2, clearly lower than the critical pH of the enamel, dentin and root cement. Furthermore, the acidic environment that is created causes demineralization, i.e., the enamel is deprived of its mineral composition, which is essentially formed by calcium and phosphate, with the appearance of dental erosions aggravated by incorrect brushing in terms of time and technique. In addition, abrasive toothpaste and stiff bristles can evolve into mechanical abrasions (lesions commonly localized in the cervical areas of the enamel) with a loss of dental substance (2, 13).

It is usually clinically observed after at least two years of induced vomiting episodes. Furthermore, the severity of erosion is directly proportional to the frequency of reflux. Patients with dental erosion are more prone to have dental sensitivity, usually present at the cervical level due to the thinner enamel layer and, therefore, with dentin exposure.

The other important feature of ED is dental caries; as a multifactorial pathology, its development cannot be attributed exclusively to EDs. The three fundamental pillars for caries prevention are proper nutrition (the first factor responsible for biochemical and physiological changes within the oral biofilm), fluoroprophylaxis, and oral hygiene. If these three measures are lacking, and to these are added genetic predisposition, malnutrition, the intake of specific drugs, altered salivary composition and flow, they influence the differences in the prevalence of caries. The destruction of the tooth's hard tissues is the work of endogenous microorganisms (*Streptococcus mutans* and *Lactobacillus*), which metabolize fermentable carbohydrates introduced by the diet, producing organic acids that cause a drop in pH, determining demineralization of the tooth enamel. Similarly, it occurs when the oral cavity is continuously exposed to gastric acids following episodes of vomiting.

Gum recession occurs mainly in adult patients due to traumatic brushing or continuous acid attacks. In addition, vitamin C deficiency can cause marginal gingivitis. Periodontal health can be further influenced by nutritional deficits and, therefore, an insufficient response of the organism to oppose the possible development of inflammation and a more rapid loss of alveolar bone.

Angular cheilitis may develop mainly due to a chronic *Candida Albicans* fungus infection, although it can also occur due to a coexisting staphylococcus infection. These species are commensal organisms, usually present within the oral cavity, representing about 50% of the population. In particular situations of imbalance, such as salivary dysfunctions and nutritional deficiencies, they can proliferate and, in this case, infect the lesions of the oral mucosa. Candidiasis can be considered a wake-up call for nutritional deficiencies caused by ED.

Glossodynia, altered taste, dysgeusia, hypogeusia, burning sensation, or stomatodynia may also be present. In addition, patients report the perception of the burning of the tongue or oral cavity, despite the insignificant clinical-pathological findings.

Side effects of pica, in addition to various types of poisoning, develop abdominal problems with discomfort and

pain in the intestines and, in most cases, occlusion requiring surgery. The teeth are mainly affected by wear, especially from continuous contact with hard objects. Another cause is prolonged and incorrect contact between the antagonist's teeth, as with bruxism, clenching, and malocclusion. It is a condition that depends on the involuntary contraction of the chewing muscles. It occurs mainly at night, and in addition, to wear, it can cause pain in the jaw due to excessive stress on the temporomandibular joint and headache. Clinically, the worn surface has a brown colour due to dentin exposure. Radiographically, the pulp chamber and canals may appear small (12).

## CONCLUSIONS

EDs are pathologies recognized as diseases of dental relevance. In most cases, they can be successfully treated when diagnosed early, and patients with known or suspected EDs should be referred immediately to a competent psychiatrist. Numerous studies have confirmed the intense correlation between EDs and damage to the oral cavity. From this perspective, dental prevention is of fundamental importance both in the early stage of interception of the disease and in the medium and long-term management of lesions to oral tissues whose appearance is related to the ED.

Dentists and hygienists play a significant role in identifying, preventing, and treating the noticeable oral health effects of EDs. Preventive action is practised by gathering information on oral hygiene and food habits and providing advice on promoting a balanced diet by transmitting knowledge on the consequences of an altered diet.

This review underlines the strong correlation between ED and oral health and highlights the importance of the dental hygienist's role and adequate knowledge of the various pathological pictures of ED so that ED can be promptly intercepted to avoid worsening of this pathology.

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