

# Short Report

## Medical and Dental Implications of Eating Disorders

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### Introduction

Eating disorders are syndromes characterized by significant disturbances in a person's eating behavior, such as extreme over- or under-eating, accompanied by intense focus or distress related to food consumption, body shape or weight.<sup>1</sup> Eating disorders are both serious and potentially dangerous and are associated with medical and psychological complications that give eating disorders a higher mortality rate than any other psychiatric disorder.<sup>1</sup> Morbidity and mortality rates may be even higher than officially reported because these patients often deny or hide the extent of their fasting, binge-eating and purging behaviors. Early detection and treatment are critical, and oral health care professionals are in an ideal position to help identify these disorders, which primarily affect women.

### Classification

Originally conceptualized as discrete illnesses, eating disorders are now viewed as falling along a continuum between anorexia nervosa, bulimia nervosa and eating disorders not otherwise specified. There can be crossover behaviors among all of these disorders.<sup>2</sup>

Anorexia nervosa is defined by the American Psychiatric Association's Diagnostic and Statistical Manual on Mental Disorders, 4<sup>th</sup> edition (DSM-IV) as a refusal to maintain body weight at or above 85% of the normal weight for a particular age and height, accompanied by an intense fear of gaining weight, an undue emphasis on body shape or weight and amenorrhea for 3 consecutive months.<sup>2</sup> Anorexia nervosa is further subdivided into restricting and purging subtypes.<sup>2</sup> Patients with the restricting type will severely limit food intake and often over-exercise, whereas patients with binge-purge type will engage in purging behavior after eating in addition to food restricting.<sup>2</sup>

Bulimia nervosa is defined in DSM-IV as episodes of binge eating that recur at least twice weekly for

### Abstract

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3 months or longer.<sup>2</sup> The bulimic presents with the same undue emphasis on body weight and shape as seen in the anorexic, but weight loss may not be as remarkable or even noticeable as with anorexia.<sup>3</sup> There are 2 subtypes of bulimia: purging and non-purging bulimia. In the purging type, binges are followed by inappropriate compensatory behavior to avoid weight gain, such as self-induced vomiting or misuse of laxatives, diuretics or enemas. In the non-purging type, the inappropriate compensatory behaviors typically include intermittent fasting and excessive exercise, but not purging or misuse of laxatives, diuretics and enemas.<sup>2</sup> The third DSM-IV category is eating disorder not otherwise specified. This includes all eating disorders that do not meet the strict criteria for either anorexia or bulimia and accounts for about 50% of eating disorders overall.<sup>2</sup> For example, binge eaters fall into this category, but unlike patients with bulimia, they do not undertake the compensatory behaviors to avoid weight gain.<sup>4</sup>

### Epidemiology

Eating disorders occur primarily in women, who comprise 90% of patients affected. For anorexia nervosa, the lifetime prevalence is 0.5 to 1.5%, and the male-to-female ratio is 1:10. For bulimia nervosa, lifetime prevalence is 1 to 4.4%, with a male-to-female ratio of 1:20.<sup>1</sup> Some experts estimate that 16 to 25% of college students have symptoms of an eating disorder.<sup>1</sup>

### Etiology

Eating disorders arise from a complex combina-

tion of genetic, biologic, psychological, family and cultural factors. Some researchers suggest that a cultural value on thinness accounts for the growing incidence of eating disorders in the U.S. and other Westernized countries.<sup>4</sup> Likewise, the media's ongoing depiction of digitally altered or otherwise unrealistic female bodies may also play a role. Activities that reward thinness or promote a particular weight classification, such as ballet dancing, modeling, gymnastics and wrestling, can also predispose someone to develop an eating disorder.<sup>5</sup> Personality traits, such as low self-esteem, difficulty expressing negative emotions, difficulty resolving conflict and being a perfectionist, are also contributing factors.<sup>6</sup>

Some individuals may be genetically predisposed to developing eating disorders. Family studies show that first-degree relatives of patients with eating disorders have a 10-times greater lifetime risk of developing an eating disorder than do relatives of unaffected individuals.<sup>7</sup>

### Systemic and Psychosocial Manifestations

Eating disorders negatively affect every system in the human body. Some medical complications are manifested soon after the onset of an eating disorder, whereas others smolder and emerge years later. Malnutrition is the primary cause of most medical complications seen in patients with anorexia, and purging leads to most medical complications seen in patients with bulimia. Systemic, physical and psychosocial manifestations that may be associated with eating disorders are located in Tables I, II.<sup>8</sup>

Underscoring the seriousness of eating disorders is the fact that women with anorexia nervosa have approximately a 50-times higher suicide rate than do similar-age women in the general population.<sup>1</sup> Prognosis is better for patients with anorexia nervosa than with bulimia nervosa. Approximately 50% of patients with anorexia nervosa will achieve a normal weight with treatment. Patients with bulimia nervosa have a higher rate of severe psychological disturbances and medical complications, and relapse is common after treatment.<sup>3</sup>

### Oral Manifestations

*Dentition:* The most extensive oral problems seen in patients with eating disorders are caused by self-induced vomiting.<sup>9</sup> Perimylolysis, a smooth erosion of the tooth enamel, is common and manifests as a loss of enamel and eventually dentin on the lingual surfaces of the teeth caused by the chemical and mechanical effects of chronic regurgitation of low-

Table I: Systemic and physical manifestations of eating disorders<sup>8</sup>

- Abdominal pain
- Bradycardia
- Carotenosis
- Constipation
- Decreased metabolic rate
- Dehydration
- Dry, scaly skin
- Dysphagia
- Dysrhythmias
- Esophagitis
- Gastroesophageal reflux disease
- Hypotension
- Malnutrition
- Osteopenia/osteoporosis
- Russell's sign (callus on knuckles from self-induced vomiting)
- Sore throat

Table II: Psychosocial manifestations of eating disorders<sup>8</sup>

- Anxiety
- Depression
- Obsessive compulsive disorder
- Personality disorders
- Physical abuse
- Sexual abuse
- Social phobias
- Substance abuse

pH gastric contents and movements of the tongue. Initially, this erosion can be observed on the palatal surfaces of the maxillary anterior teeth and has a smooth, glassy appearance. There are few, if any, stains or lines in the teeth, and when the posterior teeth are affected, there is often a loss of occlusal anatomy. Perimylolysis is usually clinically observable after the patient has been binge eating and purging for at least 2 years.<sup>9,10</sup> There appears to be a relationship between the extent of tooth erosion and the frequency and degree of regurgitation, as well as with oral hygiene habits.<sup>9,10</sup> The patient may complain of severe thermal sensitivity, or the margins of restorations on posterior teeth may appear higher than adjacent tooth structures. There may be occlusal changes, such as an anterior open bite and loss of vertical dimension of occlusion caused by loss of occlusal and incisal tooth structure.<sup>9,11</sup>

*Salivary Glands:* Enlargement of the parotid glands and occasionally of the sublingual and submandibular glands are frequent oral manifestations of the binge-purge cycle in patients with eating disorders. The incidence of unilateral or bilateral parotid swelling has been estimated at 10

to 50%.<sup>9,10</sup> The occurrence and extent of parotid swelling usually follows a binge-purging episode by several days.<sup>11</sup> Parotid swelling is soft to palpation and generally painless. In the early stages of the disorder, the enlargement is often intermittent, appearing and disappearing for a time before it becomes persistent. At that point, the cosmetic deformity tends to impart a widened, squarish appearance to the mandible, compelling the patient to seek treatment. Possible spontaneous regression of gland enlargement may occur with cessation of purging.<sup>11</sup>

The precise etiology of salivary gland swelling has not been determined, but most researchers associate it with recurrent vomiting. Mechanisms may be cholinergic stimulation of the glands during vomiting or autonomic stimulation of the glands by activation of the taste buds.<sup>9,12</sup>

In some patients who binge and purge, there may be reduced unstimulated salivary flow. Flow may also be reduced by overuse of laxatives and diuretics. As such, xerostomia may occur in bulimic patients due to reduced salivary flow and/or from chronic dehydration from fasting and vomiting.<sup>9,11</sup> Xerostomia combined with poor oral hygiene can increase risk for periodontal disease.<sup>3</sup>

*Periodontium:* Poor oral hygiene is more common in anorexic than bulimic patients.<sup>11</sup> As such, higher plaque indices and gingivitis may be more common as well. Some investigators have observed that xerostomia and nutritional deficiencies may cause generalized gingival erythema.<sup>11</sup>

*Oral Mucosa:* The oral mucous membranes and the pharynx may also be traumatized by bingeing and purging, due to the rapid ingestion of large amounts of food and by the force of regurgitation. The soft palate may be injured by objects used to induce vomiting, such as fingers, combs and pens. Dryness, erythema and angular cheilitis have also been reported.<sup>11</sup>

## Dental Management

If the oral health care professional suspects that a patient may have an eating disorder, a general screening question regarding any difficulty with eating or maintaining weight is recommended. This may lead to more direct questions and conversation, especially if there is a noticeable dental involvement. Oral manifestations should be brought to the patient's attention in a non-confrontational manner. The patient may or may not admit to having an eating disorder on initial questioning. The oral health care professional can persevere gen-

tly during initial and subsequent appointments to open communication about the problem and make appropriate referrals when indicated. It is important to point out the serious medical complications that can occur with eating disorders and to mention that these may be avoided with proper medical and psychological therapy.<sup>3</sup>

Rigorous hygiene and home care are recommended to prevent further destruction of tooth structure.<sup>11</sup> As previously reported, such measures should include the following:<sup>9,11</sup>

- Regular professional dental care
- In-office topical fluoride application to prevent further erosion and reduce dentin hypersensitivity
- Daily home application of 1% sodium fluoride gel, either applied in custom trays or with a toothbrush, to promote remineralization of enamel, or daily application of 5,000 ppm prescription fluoride dental paste
- Use of artificial saliva for patients with severe xerostomia
- Rinsing with water immediately after vomiting and followed, if possible, by a 0.05% sodium fluoride rinse to neutralize acids and protect tooth surfaces (patients should be discouraged from toothbrushing right after vomiting, as the abrasive action may accelerate enamel erosion)

Regarding definitive dental treatment, most clinical authorities urge delaying complex restorative or prosthodontic treatments until the patient is adequately stabilized psychologically.<sup>11</sup> The exceptions may include palliation of pain and temporary but non-traumatic cosmetic procedures. The rationale for this recommendation is that an acceptable prognosis for more complex dental treatment depends on cessation of the binge-purge habit.<sup>11</sup>

Members of the dental team play critical roles for identifying undiagnosed eating disorders. In fact, because of the visibility of oro-facial manifestations, oral health care professionals may be the first to encounter such patients and to play the important role of making appropriate referrals for further diagnostic work-up and treatment. Effective treatment requires a multi-disciplinary team of health professionals to provide medical/dental, psychological and nutritional support. It is important to keep in mind that eating disorders are silent killers that should not be taken lightly or ignored. Patients with suspected eating disorders should be confronted gently about suspected disorders, informed of potential complications, and encouraged to seek medical and psychological help. Considering that eating disorders have the highest mortal-

ity of all psychiatric disorders, early detection and intervention are vital.<sup>1</sup>

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