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Eating Disorders: Medical, Dental, and Oral Health Considerations

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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.[1] 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.[1] 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 healthcare professionals are in an ideal position to help identify these disorders, which primary affect women.

Classification

Feeding and eating disorders discussed in the fifth addition of the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* include anorexia nervosa, bulimia nervosa, binge-eating disorder, pica, rumination disorder and avoidant/restrictive food intake disorder. It is important to note, that the patient may move from one category to another during the course of the eating disorder.[2] This paper will address anorexia nervosa and bulimia nervosa since oro-facial manifestations may be identified by the dental professional.

Anorexia nervosa is defined by three essential features:[3]

- Persistent energy intake restriction, which leads to a significantly low body weight in the context of age, sex, developmental trajectory and physical health
- An intense fear of gaining weight or becoming fat, or persistent behavior that interferes with weight gain
- Disturbance in self-perceived body weight or shape

Subtypes of anorexia nervosa include:[3]

- Binge-eating/purging-during the past three months, the patient has engaged in recurrent episodes of binge-eating or purging behavior, with purging accomplished through self-induced vomiting or the misuse of laxatives, diuretics or enemas
- Restricting - during the past three months, the patient has not engaged in recurrent episodes of binge-eating or purging behavior; weight loss is accomplished through dieting, fasting, excessive exercise or two or more of these three

Some patients engage in cycles of binge-eating and purging in addition to frequent fasting.

Bulimia nervosa is defined as recurrent episodes of binge-eating. An episode of binge-eating is characterized by both:[3]

- Eating in a discrete period of time (e.g. within any two hour period), an amount of food that is definitely larger than what most individuals would eat in a similar period of time under similar circumstances
- A sense of lack of control over eating during the episodes (e.g. a feeling that one cannot stop eating or control what or how much one is eating)

In addition, the bulimic engages in recurrent inappropriate compensatory behaviors to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, or other medications; fasting; or excessive exercise. The binge-eating and inappropriate compensatory behaviors both occur on average, at least once a week for three months. Self-evaluation is unduly influenced by body shape and weight. Individuals with bulimia nervosa may be of average weight, underweight or overweight.

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. Some experts estimate that 16 to 25% of college students have symptoms of an eating disorder.

Etiology

Eating disorders arise from a complex combination 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.[4] Likewise, the media's ongoing depiction of digitally altered or otherwise unrealistic female bodies may also play a role. Activities that reward thinness or stress a specific weight standard, such as ballet dancing, modeling, gymnastics and wrestling, can also predispose someone to develop an eating disorder.[5] Personality traits, such as low self-esteem, difficulty expressing negative emotions, difficulty resolving conflict and being a perfectionist, are also contributing factors.[6]

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.[7]

Systemic and Psychosocial Manifestations

(See Tables I and II)

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.

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.[1] 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.[8]

Systemic and Physical Manifestations of Eating Disorders[9]

Table I

- 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

Psychosocial Manifestations of Eating Disorders[9]

Table II

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

Oro-facial Manifestations *(See Table III)*

Dentition: The most extensive oral problems seen in patients with eating disorders are caused by self-induced vomiting.[10] 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 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 two years.[10,11] 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.[10,11] 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.[10,12]

Research findings are inconsistent related to the impact of eating disorders upon the prevalence of dental caries and periodontal disease.[13] The differences in the prevalence of caries resulting from disordered eating may stem from an individual's oral hygiene, the cariogenicity of the diet, malnutrition, genetic predisposition, fluoride experience during tooth development and ingestion of certain types of medications.[13] However, distinguishing characteristics among disordered eating patients regarding caries include a predisposition to cervical caries and/or a leathery lesion of dentin, leaving large areas of enamel undermined.[13]

Salivary Glands: Swelling/enlargement of the salivary glands known as sialadenosis may occur. 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%.[10,11] The occurrence and extent of parotid swelling usually follows a binge-purging episode by several days.[12] 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.[12]

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.[10, 14]

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 due to fasting and vomiting.[10, 12] Xerostomia, combined with poor oral hygiene, can increase risk for periodontal disease.[8]

Oral-Facial Manifestations*

Table III

- Perimylolysis- leads to increased tooth sensitivity
- Traumatized oral mucosal membranes- soft palate and pharynx most common areas
- Xerostomia
- Complaints of a dry mouth
- Caries- more common in anorexics than bulimics
- Poor oral hygiene
- Periodontal disease
- Soft tissue lesions- secondary to nutritional deficiencies and dehydration
- Angular cheilitis
- Candidosis
- Glossitis
- Oral mucosal ulceration, dryness and cracking
- Chapped or cracked lips
- Sialadenosis- parotid gland most common
- Facial lanugo-growth of fine body hair
- Loss of head hair

**Oral manifestations differ depending on the specific behaviors associated with various disorders*

Periodontium: Advanced periodontal disease is rarely seen in eating-disorder patients because most of them are relatively young, however it has been observed that poor oral hygiene is more common in anorexic than bulimic patients.[12, 15] 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.[12] The loss of moisture and the protective properties of saliva can result in dehydration of the periodontal tissues. Dietary vitamin and protein deficiency can exacerbate the situation.[15]

Oral Mucosa: The oral mucus membranes and the pharynx may also be traumatized by binging and purging, due to the rapid ingestion of large amounts of food and 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.[12]

Screening

If the oral healthcare professional suspects that a patient may have an eating disorder, he or she should use the SCOFF questionnaire as an effective screening tool.

SCOFF Questionnaire[16]

Do you make yourself **S**ick because you feel uncomfortably full?
Do you worry you have lost **C**ontrol over how much you eat?
Have you recently lost **O**ver 14 pounds in a 3-month period?
Do you believe yourself to be **F**at when others say you are too thin?
Would you say that **F**ood dominates your life?

This questionnaire is used to help identify those patients who may be suffering from anorexia or bulimia nervosa. When the patient responds "yes" to two or more of the five questions, the patient has received a positive test result. Subsequently, the oral healthcare professional should initiate a discussion with the patient about their eating patterns and oro-facial manifestations to determine if a referral is the necessary course of action. It is important to approach the patient after a trustworthy relationship is established. Regardless of the dental professional's manner, it is important to casually confront the patient in a nonjudgmental way, with respect and support. As always, eye contact is also essential.[17] The patient may or may not admit to having an eating disorder upon initial questioning. 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.[8]

Dental Management

Rigorous hygiene and home care are recommended to prevent further destruction of tooth structure.[12] Such measures should include the following:[10,12]

- Regular professional dental care, including frequent preventive visits to monitor progress
- Instruction in proper oral hygiene
- 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
- Dry mouth remedies
- Sensitivity treatment- may require restoring teeth with severe enamel loss
- Rinsing with water (with baking soda added, if available) 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 tooth brushing immediately after vomiting (wait at least 30 minutes) 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.[12] 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.[12]

Conclusion

Members of the dental team play critical roles in identifying undiagnosed eating disorders. In fact, because of the visibility of oro-facial manifestations, oral healthcare 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. Management of eating disorders may include hospitalization, nutritional rehabilitation, psychosocial therapy, medications, the use of the addiction model or a combination of psychosocial and medication strategies.

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, informed of potential complications and encouraged to seek medical and psychological help. Considering that eating disorders have the highest mortality of all psychiatric disorders, early detection and intervention are vital.[1] ■

Author Biography

BARBARA J. STEINBERG received her D.D.S. from the University of Maryland School of Dentistry and completed a residency at the Medical College of Pennsylvania. She is Clinical Professor of Surgery at Drexel University College of Medicine, as well as Adjunct Associate Professor of Oral Medicine at the University of Pennsylvania School of Dental Medicine. She is a Diplomate of the American Board of Oral Medicine.

Dr. Steinberg specializes in the treatment of medically complex patients. She is a nationally and internationally invited lecturer in the area of dental treatment of the medically compromised patient and women's health, and has authored numerous articles and contributed to major textbooks on these subjects.

For the last fifteen years Dr. Steinberg has been named by Dentistry Today "One of the Top Clinicians in Continuing Education". Dr. Steinberg is a former spokesperson for the American Dental Association on Women's Oral Health Issues and has had numerous television appearances, including Good Morning America. She represented the American Dental Association at a congressional briefing on Women's Oral Health Issues and presently serves on the Health, Nutrition and Fitness Board of Women's Day Magazine.

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