

Eating disorders and oral health

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Abstract

Eating disorders are somatic symptom disorders i.e. person feels extreme, exaggerated anxiety about physical symptoms. The people suffering from eating disorders have such intense thoughts, feelings, and behaviors related to the symptoms, that they feel they cannot do some of the activities of daily life. So their study is both necessary and difficult. Eating disorders have become very prevalent in today's society; despite this people treat EDs and people suffering from EDs with a certain stigma. Early detection and intervention play a huge role in treatment for eating disorders. Dentists and dental hygienists can play a pivotal role in diagnosis and treatment of eating disorders by providing a timely diagnosis. Also as dental practitioners, it is our duty to raise awareness about EDs. In this article, we discuss eating disorders, their classification, symptoms, epidemiology, etiology, manifestation and management.

Keywords: Eating disorder, Classification, Anorexia nervosa, Bulimia nervosa, Epidemiology, Etiology, Systemic manifestations, Oral manifestations, Dental management.

Introduction

With the widespread new age thinking about the attractiveness of thin bodies, eating disorders among adolescents and teenagers have become very common nowadays. Eating disorders (ED) are a group of psychopathological disorders affecting patient relationship with food and her/his own body, which manifests through distorted or chaotic eating behavior, such as restricted or binge eating, etc. ED are very serious behavioral disorders that may not be easily identifiable without a close inspection. Mouth acts as a window for the body as it is the pathway for the entry of food within our body. It can help diagnose eating disorders by studying the oral manifestations of eating disorders. The earlier an ED is diagnosed, the more chances there are of it being treated without any complications. ED syndromes differ on the basis of eating behavior, like bingeing or under-eating, accompanied by intense concern or distress related to food consumption, body shape or weight. The morbidity and mortality rates in EDs are dependent upon the extent of fasting, bingeing and purging behaviors. About 3% of Americans, or 8 million

people, have anorexia, bulimia and related eating disorders, according to the National Association of Anorexia Nervosa and Associated Disorders. These life-threatening conditions also have serious consequences for oral health.¹

Classification of EDs

Disordered eating habits can occur in any age but are most common in teens and young adults since early ages. In the past women and girls used to wear corsets to shape their body in a thinner way and the same prominence is given to the values of attractiveness that was followed by people in ancient times. Eating disorders are psychological disorders and can coexist with a wide host of behavioral problems like anxiety, substance abuse, depression, etc.

Eating disorders can be classified into following different types:^{2,3}

1. *Anorexia Nervosa (AN)* is the most well-known eating disorder. Anorexic people generally find themselves feeling overweight or fat, even when they are dangerously underweight. This disorder is most commonly paired up with obsessive

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- compulsive disorder (OCD), i.e. they are constantly preoccupied with and may even hoard food. It is categorized into two subtypes- restricting type and binge eating then purging type. It is very damaging to the body, leading to thinning of bones, infertility, brittle hair and nails and the growth of a layer of fine hair all over body and in severe cases, brain or multi-organ failure and death. Its symptoms may include:
- a. Being significantly underweight compared to other people of same age group
 - b. Restricted eating patterns
 - c. Intense fear of gaining weight
 - d. Placing heavy influence of bodyweight on self-esteem
 - e. Distorted body image
2. *Bulimia Nervosa (BN)* is consumption of a large amount of high calorie foods within a short amount of time. Each episode continues till person feels uncomfortably full, without any control, followed by them compensating for the high calorie consumption via behaviors like forced vomiting, fasting, laxatives, diuretics, enemas and excessive exercise. These individuals are generally normal weight. Common symptoms include:
- a. Recurrent episodes of binge eating, with a distinct lack of control
 - b. Recurrent episodes of inappropriate purging behaviors like vomiting, abuse of laxatives, diuretics etc. to prevent weight gain
 - c. A self-esteem overly influenced by body shape and weight
 - d. A fear of gaining weight, despite having a normal weight
3. *Binge eating disorder* is one of the most common eating disorders, esp. in the US. In this disorder, people generally tend to eat large amounts of food, however, contrary to prior disorders; they do not try to compensate excess calories by any means. They are often overweight or obese, with risks of heart disease, stroke or type 2 diabetes. Common symptoms are:
- a. Binging on food secretively until becoming uncomfortably full, despite not feeling hungry.
 - b. Uncontrollable binge eating.
 - c. Feeling distress, such as shame, disgust or guilt, during the binge-eating behavior or even when thinking of it.
 - d. No purging behaviors that are common in BN.
4. *Pica* is a disorder concerned with people eating things other than food. People crave substances like chalk, ice, dirt, soil, hair, paper, soap, cloth, wool, pebbles, etc. it is most frequently observed in children, pregnant women and mentally-handicapped people. People may be at a risk for poisoning, infections, gut injuries or nutritional deficiencies.
5. *Rumination Disorder* is a condition in which a person voluntarily regurgitates food they have previously chewed and swallowed, re-chews it and then either re-swallows it or spits it out. It generally occurs 30 minutes after a meal, and can occur during infancy, childhood or adulthood. In infancy, it is self correcting within a year but requires therapy in later stages of life.
6. *Avoidant or Restrictive Food Intake Disorder (ARFID)* used to be known as "feeding disorder of infancy and early childhood." ARFID generally develops during infancy or early childhood and can persist into adulthood. It is equally common in men and women. People suffering from this disorder experience a lack of interest in eating or a distaste for certain smells, tastes, colors, textures or temperatures that interfere with normal eating habits. Common symptoms of ARFID include:
- a. Person avoiding or restricting food intake that prevents them from gaining sufficient calories or nutrients.
 - b. Compulsive eating habits, even at inappropriate times and places
 - c. Underweight or poorly developed people comparing from their own age group
 - d. Nutrient deficiencies
 - e. Dependence on supplements
7. *Otherwise Specified Feeding or Eating Disorder (OSFED)* was previously known as Eating Disorder Not Otherwise Specified (EDNOS). It is a heterogeneous, not well defined group of eating disorders and includes partial syndromes of AN & BN, purging disorder and binge eating disorder (BED). Common symptoms include:

- a. Frequent episodes of bingeing of food followed by behaviors to prevent weight gain
 - b. Evidence of binge eating
 - c. Self-esteem overly dependent on body image
 - d. Dieting behavior
 - e. Excessive exercising
 - f. Evidence of purging behaviors
8. *Orthorexia* entails cutting out a large number of food groups from diet like all sugar, all carbs, all dairy, all meat etc., which may or may not involve body image concerns.
 9. *Compulsive Exercise* involves people exercising compulsively; even at times they have important matters to attend to, or in inappropriate surroundings, despite medical conditions or injuries. People might feel anxiety, distress or depression if they are unable to exercise.
 10. *Diabulimia* is a relatively uncommon ED. It occurs in people that suffer from type 1 diabetes but deliberately give themselves less insulin than needed by their body or stop taking it altogether for the purpose of losing weight, fearing that insulin intake may cause them to become fat.⁴

Epidemiology

While eating disorders were thought to be limited to western countries and ideologies; recent studies have shown a rapid advent of eating disorders within developing countries.

Anorexia and Bulimia are the most well known disorders, but the most common disorder is OSFED since it involves a large number of varying symptoms. The incidence rate of AN is highest in the group of 15-19 year old girls, while the occurrence of BN has decreased since the early nineties of the last century. BED is the most common disorder among men and older individuals. The highest mortality rate is seen in AN.⁵ Women with AN have 50 times higher suicide rates than normal women of the same age group while patients with BN have a higher rate of severe psychological disturbances and medical complications and relapse.⁶

Etiology of eating disorders:^{7,8}

EDs are complex disorders and so their etiology is often multifactorial. Though the exact cause of eating disorders is unknown, it is generally believed that a combination of biological, psychological, and/or environmental abnormalities contribute to the development of these illnesses.

Biological Factors

1. Genetics – Studies have shown that approximately 40-60% of the risks of AN, BN and BED can be attributed to genetic factors. So, a person whose immediate family member is suffering from an ED is more likely to develop one.
2. Hormonal Imbalance – Ovarian hormones, i.e. Estrogen and Progesterone play a large role in development of BN and BED in young females.^[9]
3. Nutritional deficiencies – Deficiency of minerals like sodium, potassium etc. can eating disorders like pica to develop.
4. Brain-based disorder
5. Gender
6. Adolescent onset

Psychological factors

1. Negative body image
2. Poor self-esteem

Environmental factors

1. Dysfunctional family dynamic
2. Professions and careers that promote being thin and weight loss, such as ballet and modeling
3. Aesthetically oriented sports like gymnastics, diving, etc.
4. Family and childhood traumas: childhood sexual abuse, severe trauma
5. Cultural and/or peer pressure among friends and co-workers
6. Stressful transitions or life changes

Manifestations

Systemic manifestations

EDs negatively affect every part of the body, both in the long and short term.

1. Anorexia can cause vitamin deficiencies, which may result in cognitive malfunctioning, electrolyte

imbalance, arrhythmia, bradycardia, hypotension, hypothermia and muscle weakness.

2. Anorexia may manifest as malnutrition, seizures, fatigue, dizziness and fainting, amenorrhea, dry skin and brittle nails and bone loss.
3. Systemic consequences of bulimia include metabolic acid-base imbalances, hypochloremia, hypokalemia, hyponatremia, hypomagnesia, hypocalcemia, hypouricemia, esophageal ulcers and edema.
4. Laxative abuse for purging may cause constipation, malabsorption of fat and fat-soluble vitamins A, D, E & K; gastrointestinal bleeding, rectal prolapse, potassium and calcium depletion, and increased risk for colon cancer.^[10]
5. Bulimia can result in arrhythmias, dehydration, bloating, abnormal bowel functioning, fatigue and Russell's Sign (sores, scars, or calluses on the knuckles or back of hands).

Psychosocial Manifestations

1. EDs can be linked with multiple psychological disorders like Anxiety, Depression, Obsessive Compulsive Disorder, Substance Abuse, Self-Injury and Borderline Personality Disorder, which are also known as co-occurring disorders.^[11]
2. There is a lot of social stigma associated with EDs. People with EDs are generally suffering from body image issues and low self-esteem.
3. People with EDs feel isolated and judged by their peers and have problems expressing themselves in public.

Oral manifestations:^{12,13,6}

Although most oral manifestations noted in patients with eating disorders are multifactorial and might be unrelated to ED in some patients, following problems are most common in patients with eating disorders:

Extraoral manifestations

1. Early-onset Osteoporosis can occur due to deficiency of estrogen triggering menopausal reactions within the body and causing thinning of bones.¹⁴
2. Degenerative arthritis of TMJ is often associated with EDs. Arthritis may lead to pain in joint area,

chronic headaches and problems with chewing and opening/closing of mouth.^[15]

3. Loss of vertical dimension can occur due to occlusal wear or due to thinning of cortical plates of jaw due to nutritional deficiency.

Intraoral manifestations

Dentition

1. Perimyolysis is the smooth erosion of dental enamel and dentin caused by chemical and mechanical effects of repeated regurgitation of stomach contents, with low pH due to presence of conc. HCl.
2. Dental caries occur more frequently in patients with EDs due to Xerostomia, dental erosion and increased intake of cariogenic foods.
3. Dentin hypersensitivity or thermal sensitivity is common due to erosion and carious tooth surfaces.
4. Anterior open bite may occur due to wearing of incisal tooth surfaces.

Salivary glands

1. Sialadenosis or Hypertrophy of parotid glands occurs bilaterally, commonly, in patients that purge by vomiting. Other major salivary glands may be affected too. It is soft and painless but causes cosmetic defect.
2. Xerostomia occurs due to decrease in the rate of unstimulated saliva flow due to overuse of laxatives/diuretics or due to chronic dehydration from fasting and vomiting.

Periodontium

1. Higher plaque indices
2. Gingivitis
3. Gingival erythema
4. Periodontitis

Oral mucosa

1. Epithelial atrophy, erosion and ulceration of oral mucosa
2. Hypogeusia (taste alteration) due to atrophic glossitis
3. Angular cheilitis
4. Erythema
5. Absence of pharyngeal gag reflex

Management of EDs:¹⁶

1. Nutritional counseling: Severely underweight patients should be counseled to restore their weight, normalize eating patterns (quantity and frequency), achieve normal perceptions of hunger and satiety, and correct other biological and psychological sequelae of malnutrition, like co-occurring disorders. Patients should be introduced to feeding programs and forced feeding technique should be used, when necessary.
2. Medications such as antidepressants, antipsychotics, or mood stabilizers have proven to be helpful for treating eating disorders and other co-occurring illnesses like anxiety or depression.
3. Psychotherapy is also considered very effective in treatment of EDs, for example a family-based therapy called the Maudsley approach, in which parents of adolescents from AN take responsibility for feeding their children. Cognitive behavioral therapy (CBT) can be considered useful to reduce or eliminate eating disorders, to learn how to identify distorted or unhelpful thinking patterns and recognize and change inaccurate beliefs.¹⁷

Dental management:¹⁸

1. On identifying the signs, patient should be gently guided and counseled so as to not spook the patient.
2. Dental erosion and mucosal lesions should be closely monitored.
3. Patient should be advised for fluoride application to facilitate remineralization.
4. Abrasive materials should not be used during treatment.
5. Complex restorative procedures should be postponed for after the stabilization of body weight and vomiting cycles.
6. Dentin hypersensitivity should be treated with potassium oxalates, strontium chlorate, fluoride varnish, and desensitizing toothpastes.
7. Patient should be briefed on oral hygiene instructions like brushing techniques and tongue cleaning, esp. after vomiting.
8. Bulimic patients should be prescribed sugarless gum like xylitol to stimulate salivary flow.

9. Usage of Palliative measures such as mouthguards, buffering agents such as antacids following SIP (self induced purging/vomiting) and non-acidulated fluorides should be encouraged.

Conclusion

Eating disorders, right now are providing us with some pretty scary statistics. Its horrifying to think that as many as 50%, maybe even more girls around the world experience body image and self-esteem issues. Despite these big numbers and despite getting media coverage, society as a whole still misunderstands eating disorders. Eating disorders are not just a teen thing, or over dramatization from the younger generation, nor are it something that can just be cured by clean living. Eating disorders are varied in their area of affectation, and can not only cause physiological problems but can also result in co-occurring psychological disorders. So, as dental practitioners, we need to raise awareness and start eradicating the root of these disorders.

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Conflict of Interest

None.

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