Eating Disorders: An Overview of Anorexia Nervosa and Bulimia Nervosa
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Purpose
The purpose of this article is to provide a review anorexia nervosa and bulimia nervosa. An overview of each disease will be provided including its etiology, diagnosis, complications and treatments.

Objectives
1. Identify diagnostic criteria of anorexia nervosa and bulimia nervosa.
2. List three potential medical complications of anorexia nervosa and bulimia nervosa.
3. Discuss etiological factors contributing to anorexia nervosa and bulimia nervosa.
4. Discuss approaches in the treatment of anorexia nervosa and bulimia nervosa.
5. List three complications of bulimia nervosa and anorexia nervosa.
6. Discuss proposed precipitating risk factors for anorexia nervosa and bulimia nervosa.
7. Discuss the role of psychotherapy and pharmacotherapy in the treatment of anorexia and bulimia nervosa.

Introduction
Anorexia nervosa and (AN) and bulimia nervosa (BN) are prevalent disease and knowledge of these two conditions is critical for all health care workers. AN and BN remain under diagnosed diseases as they are often overlooked by providers or hidden by patients. Patients will go to extremes to hide their symptoms and abnormal behaviors. Patients often fool themselves by internally denying the disease and delay seeking professional help. In both AN and BN, getting help early in the course of the disease is critical to avoid complications.

Those with AN have a distorted body image of themselves. They often see themselves as overweight despite the fact they are often extremely thin. AN patients make extreme lifestyle choices by participation in starvation diets, exercise excessively or completely refuse to eat in front of others.

All women with weight loss or a new onset medical problem should have an eating disorder considered in the differential diagnosis. AN is characterized by weight loss, extreme fear of weight gain and body image disturbance (1, 2). AN may also be associated with feelings of perfectionism and powerlessness and lead to malnutrition and semi-starvation. While a hallmark of BN, purging is often seen in AN, and may be associated with erosion of dental enamel after repeated self-induced vomiting.

Bulimia is characterized by a patient who repeatedly eats a large amount of food than attempts to rid the body by purging (3, 4). Those with BN are often shamed and do their purging in secret, but the act of purging typically relieves
stress and makes them feel better. Purging can take many forms including: self-induced vomiting, or taking diuretics, laxatives or enemas.

Another eating disorder that is sometimes seen is binge eating disorder. Binge eaters participate in eating large quantities of food, but do not purge their bodies of the extra calories. Binge eating disorder is a distinct category of eating disorders. There is no clear link between obesity and binge eating disorder. Treatment of binge eating disorder is similar to other eating disorders consisting of medications and therapy, particularly, cognitive-behavioral therapy.

Eating disorders are associated with multiple medical complications, often without obvious signs or symptoms. Even laboratory or diagnostic testing can be normal until late in the disease. Clinicians must assure that patients with eating disorders are medically stable prior to implementing psychiatric treatment.

Those with eating disorders are preoccupied with food, their body weight and a sense of control. They often feel out of control and the controlling eating patterns is one way that helps these patients maintain an internal sense of control. Some develop rules about food and eating habits to help maintain control. As time passes those with eating disorders feels more and more powerless. In AN, starvation helps maintain control and helps manage feelings of emotional emptiness. This sets up a cycle of negative emotion and can culminate in self-criticism which may lead to depression and even suicide.

The treatment of eating disorders includes therapy, behavioral interventions and medications (3). The psychotherapy looks to deal with many of the thoughts and behaviors at the foundation of the disease such as: hunger, chaotic eating, inadequate caloric intake, and emotions like sadness, anger and fear.

Bulimic patients find multiple ways to purge and the frequency of these behaviors are directly related to the degree of medical complications (5). Methods used by bulimics include: vomiting, use of diuretics, use of laxatives, and periodic excessive restriction of calories or prolonged exercise. These behaviors often result in wide fluctuations of weight. Patients try hard to avoid the binge, but cannot resist. Binges can result from depression, anxiety, anger, conflict or they may result spontaneously. After a binge the bulimic may feel guilty, calm or dysphoric.

Treatment for BN is usually outpatient but if there is suicidal ideation, treatment is refractory, the disease is severe or there is a medical complication an inpatient stay may be warranted (7). Timely intervention is critical as those who get early intervention have better outcomes.

Eating disorders are often misunderstood, even by health care providers; the result can be inadequate care. It is often viewed as a bad habit, instead of a disease process. Improving one’s knowledge and conveying empathy for these patients is critical in the management of eating disorders. Patients with eating disorders often have low self-worth and it is important that the health care providers convey patience and empathy while avoiding judgment.

Epidemiology
AN and BN are common, but under diagnosed. Although most common in young women, it can affect men and women of any age, social class, or ethnicity. Eating disorders are 10 to 30 times more prevalent in women than in men (3).

The incidence of AN is 0.1 to 0.6 per a 100,000 population; but among women between 15 and 25 the rate is 50-75 per a 100,000 population (1). These numbers may be underreported as this disease is mainly a secretive disease.

Anorexia typically starts between the ages of 13 and 18. While mainly a disease of women between the age of 13 and 40 it can affect men and women of any age, any social class, or ethnic group (1, 2). Stress can precipitate AN, such as trying to get into college.

One to 3% of women in their teens and early 20’s have BN. The disease is not well treated with remission rates at 55% at two years, 71% after six years and 70% after ten years (7).

Males – especially certain athletes such as wrestlers or bodybuilders – account for an estimated 10-15% of bulimics (7). Non-whites are less commonly affected by eating disorder than whites (11). It also more common in the more affluent populations (11). It is difficult to ascertain if the prevalence is actually higher in the more affluent and white population or if it is just recognized by health care providers more commonly in this population.

In BN, the peak period of onset is 18 years old and the lifetime prevalence is 2.6 to 3.1 percent (3, 4). Patients with BN often have other psychiatric problems such as substance abuse disorders, anxiety disorders, affective disorders and personality disorders. Those with depression, cluster B personality disorder and impulsivity have the worst outcome (5).

BN is the most common eating disorder, but anorexia nervosa and bulimia nervosa sometimes overlap, approximately 50% of anorectics have bulimic symptoms. Most patients with bulimia are of normal weight, overweight or obese (13). Males who are bulimic have a higher prevalence of homosexuality, bisexuality, psychiatric co-morbidity, and/or substance abuse (7, 11, 13).

Etiology

The etiology of AN and BN is not well understood, but the cause is most typically multifactorial. Certain features that are associated with eating disorders include: certain character traits such as powerlessness, low self-esteem and perfectionism; media influences; family, peer and societal pressures; puberty; childhood teasing; participation in certain sports and careers; genetic factors; type I diabetes; hormone and neurotransmitter imbalance; psychiatric co-morbidity; distorted self-image; environmental stressors and sexual or physical abuse (1, 2, 3, 4).

AN has a genetic basis and it is cultivated in dysfunctional families (1, 2, 9). AN is more common in identical twins than in fraternal twins (1, 2). Girls with a mother who had an eating disorder were almost 3 times as likely to have an eating disorder as those who have a mother who never suffered an eating disorder (24). Other data indicates that familial influence may be even greater. One author suggests that there is a 2-20 times higher risk of eating disorders in patients who is related to someone with an eating disorder (11). It is difficult to
determine if this is a purely genetic trait or if it is a learned behavior. Likely, it is a combination of the two.

While data is stronger in AN, genetics contribute to bulimia nervosa. BN is been shown in twin studies (7). Other factors associated with BN include: family history of depressive disorders, obesity and alcoholism (4, 7, 11).

The father is important in the development of eating disorders. Fathers who value thinness increase their children’s risk of developing an eating disorder. Children between 9 and 14 years old are more likely to become frequently dieters when thinness was valued by their fathers (14).

Although controversy exists, AN is more common in families where sexual, physical, or emotional abuse occurred. There is a complex interaction between eating disorders and thoughts/behaviors. Those with AN want to often meet others’ expectations. This may be an attempt to avoid punishment, or to defeat feelings of guilt and shame.

The media contributes to eating disorders. Media mediums such as television, movies, internet and even radio all contribute to eating disorders. A study of 837 ninth-grade girls, demonstrated that watching music videos contributed to body image and weight concerns. A thin body is portrayed as attractive by the media as most models are thin and many athletes are lean (6).

However, most young women are unable to attain the ultra-lean body preferred by the media; this inevitable failure is a predecessor to internalized negative feelings, and this tends to worsen AN. Patients with eating disorders often feel shame about their body and feel others are judging them against these idealized media figures.

The world wide web may contribute to eating disorders. There are a number of websites that are “pro-eating disorder”. These websites promote patients to be thin and even encourage activities such as starvation and purging in an effort to become thin.

Groups of athletes or those who participate in certain activities are at increased risk for eating disorders. Ballet, modeling, wrestling and running are all associated with a lean physique and an increased risk of eating disorders. Skating and diving have also been linked to eating disorders (9, 15). Participants in aesthetic sports such as dance, gymnastics, cheerleading are also at increased risk.

AN patients struggle with powerlessness and perfectionism. Low self-esteem is compensated for by attempting to be perfect. These patients are very self-critical and have high expectations of themselves. They do not respond to rejection well and the eating disorder is a way to cope and provides for a patient’s a sense of control. The patient may show severe distress with a slight weight change and uses the body to gain attention and affection. The body is used a source of self-esteem.

To sum up, below is a list of factors associated with eating disorders (5, 7, 9, 10, 15):

- Early onset of menses
- Childhood sexual, emotional and physical abuse
• Psychiatric co-morbidity
• Dissatisfaction with body image
• Preoccupation with weight
• Girls whose mother had an eating disorder or a family history of eating disorders
• Low self-esteem
• Trying to look like people in the media and exposure to these images
• Depression
• Obsessive behaviors
• Binge drinking
• Unintentional weight loss after a medical illness
• Deliberate self-harm
• History of substance abuse
• Helplessness
• Fear of loss of control
• Decreased libido
• Self-loathing
• Disgust with the body
• Interpersonal conflict
• Homosexuality
• Negative comments about weight by the father
• Participation in a sport or occupation that emphasizes thinness

**Diagnosis**

Because it is such an under diagnosed disease, it is important for health care providers to look for eating disorders. Screening is one method that can uncover hidden cases of the disease. Screening should ensue on all of those at risk. It is therefore important for health care providers to have a firm grasp on who is at risk. The clinician should question his/her at risk patient’s subjective feelings regarding food and body image.

The DSM-IV (8) defines AN as a refusal to sustain body weight at or more than a minimal typical weight for age and height. Less than 85% of ideal body weight is often used in the diagnosis of AN. A psychological component is an important part of AN including: an intense fear of gaining weight or becoming fat and distorted body image. The absence of menses for at least 3 menstrual cycles is necessary for the diagnosis of AN.

AN is classified as the restricting type or the binge eating/purging type (5). The restricting type is characterized by limited food intake without purging behaviors. The purging type is characterized with restricted intake along with purging behaviors such as laxative abuse or self-induced vomiting.

Early detection and intervention is critical as these behaviors may lead to a decline of overall health and may threaten reproductive health. Initially appetite is stable but as the disease worsens, the appetite decreases. The clinician should take a complete medical, family and psychosocial history. Evaluation of
physical, sexual or domestic abuse should be sought. The clinician should evaluate weight, height, nutritional status, resting energy parameters and take a review of systems (2, 9). Three screening questions may be used for anorexia (9):

- How much do you want to weigh?
- How do you feel about your current weight?
- Are you, or anyone else concerned, about your eating or exercise habits?

Anorexia nervosa may be associated with changes in multiple body systems including (1, 2, 4):

- Bradycardia
- Cardiac murmur
- Orthostatic changes in pulse or blood pressure
- Lightheadedness
- Fatigue
- Hypothermia
- Abdominal pain
- Dull, thinning scalp hair
- Sunken cheeks
- Brittle nails
- Lanugo
- Sallow skin
- Atrophic breasts
- Atrophic vaginitis
- Pitting edema of the extremities
- Emaciation (may be hidden by oversized clothes),
- Flat affect
- Cold extremities
- Acrocyanosis

When the disease is severe the cachectic appearance of the patient is easily seen. Systolic blood pressure may be as low as 70 mm Hg. Bradycardia and rhythm disturbance may suggest of impaired cardiac function and/or electrolyte imbalance.

When the diagnosis of AN is made or the clinician is highly suspicious, referral to an expert for comprehensive evaluation and treatment is recommended.

Pregnancy and AN are a bad combination and a pregnancy test should be performed on all of those with AN who are of childbearing age and are sexually active or suspected of being sexually active. Referral to an expert is critical for the pregnant anorexic. The patient needs to have a complete cardiac work up to rule out any arrhythmias or any other cardiac pathology. The pregnant anorexic
needs intense follow up to assure the disease is managed and no complications occur.

The DSM-IV (8) considers bulimia nervosa as uncontrollable recurrent binge-eating (eating large quantities of food in a short time frame) with recurrent inappropriate compensatory actions to control weight. This may include self-induced vomiting; laxative, diuretic and enema misuse; fasting; compulsive exercise; and abuse of other medications to control weight. These behaviors have to be there for a minimum of three months with an average frequency of twice a week.

Most people with BN are of normal weight and some have a history of obesity. A history that reveals a fear of weight gain, purging through self-induced vomiting, excessive exercise, strict fasting, or the abuse of laxatives, diet pills, enemas or diuretics is suggestive of BN.

Purging may induce a sense of calmness and good feelings which may contribute to the repetition of the binge-purge cycle. Vomiting may become almost reflexive to the bulimic. Abuse of laxatives or diuretics misuse is often not effective at getting rid of calories, but instead leads to extreme fluid loss, which may be associated with major complications and limited weight loss. Stimulant laxatives - bisacodyl, cascara sagrada, or senna – have the potential to lead to dependency, tolerance, a flaccid colon, electrolyte imbalance, and dehydration. Ipecac syrup is another method often used to purge calories.

Like the anorexic, the bulimic is preoccupied with body shape and weight and often has body image distortion (8). BN may be purging or non-purging. Purging type is associated with self-induced vomiting or laxatives, diuretics, or enemas use. The nonpurging type is associated with inappropriate compensatory measures which do not usually include purging (10). An astute clinician may be able to pick up the disease early as bulimic patients often have abnormal thinking and behavior before meeting diagnostic criteria for BN. Many never do meet criteria, but still practice dangerous eating behaviors.

It is a challenging diagnosis for the clinician as the behaviors are often done behind closed doors and they are never talked about with the anyone including the clinician or even close family or friends. Patients with BN typically do not appear ill and may have weight that is high, normal or low (7, 11). Eating disorders can be challenging to classify and may be looked at on a continuum varying from normal body awareness to high risk dieting behaviors to an eating disorder. Recognition of hallmark signs and symptoms is critical as prompt evaluation and interventions improves outcome.

Bulimics may be asymptomatic or may have multiple complaints – some are related to the compensatory mechanisms. Common symptoms include: weight fluctuation, fatigue, weakness, abnormal menses, insomnia, heartburn, constipation, edema, bloating, swollen cheeks and dental problems (3, 4, 7). The use of diuretics or laxatives may be reported as a self-treatment measure of edema or constipation. Constipation or abnormal bowel movements may be secondary to inadequate food intake. Medications to stimulate the metabolism should be asked about including thyroid medications, caffeine or pseudoephedrine. The use of herbal supplements and teas should be
questioned by the clinician as they may lead to hypertension or electrolyte imbalance.

When taking a history caution must be used as many of these issues are sensitive and possibly embarrassing. Avoid judgmental statements. One method includes asking the patient if she has any worries about her eating habits or whether she prefers to eat alone.

Irregular menstrual cycles or amenorrhea are common in eating disorders, this does not indicate anovulation. Long-term fertility is typically not affected (but it may be) (12). Assessment of birth control method is critical as these patients are at risk for pregnancy, as many think that irregular menstrual cycles will prevent pregnancy (10). Clinicians must keep this in mind, as those with eating disorders may deny the possibility of pregnancy.

Assessment of body weight patterns can help in the treatment of eating disorders. Those who plot body weight on a timeline can help show patterns and may help identify causative factors to problem eating or behaviors (10). Evaluating the range of weights can provide clues as to the severity of the disease. Use a growth chart to evaluate patients who are still growing.

Eating disorder can be socially disabling as many are depressed, ashamed, isolated, and out of control. A complete psychological assessment is an essential part of the evaluation of an eating disorder as it is often associated with other psychiatric conditions. Patients may be persistently thinking about food and body weight. It is especially important to evaluate for any suicidal ideation.

It is important to determine the frequency of binging, the amount and types of food consumed, the duration of the binge and how the patient felt while binging. Journaling may be helpful for both the health care provider in the assessment of the disease and the patient. The patient may gain insight into why they are binging with the use of journaling.

Eating disorders are secretive and patients may not share details about their eating or purging habits. The patient is not in control during a binge, eating up to 3000 calories and sometimes more, and eating foods that are high in carbohydrate and fat content that are easily thrown up.

Many methods are used to purge but self-induced vomiting is the most common often with the finger, toothbrush or utensil stuck down the throat. Syrup of ipecac is also used to induce vomiting. Others are able to vomit of their own volition.

Compulsive exercise is another behavior to get rid of extra calories. Some patients may exercise for up to four hours a day. One way to assess for this is to ask the patient what she does to prevent weight gain. Lastly, monitor for any complications associated with purging behaviors (10).

The differential diagnosis of eating disorder is extensive. Other disease states may present with binge eating such as depression, anxiety and personality disorders. While binge eating is common in these patients, they usually do not engage in purging behaviors. Eating disorder, not otherwise specified may be used for disorders that do not meet the full criteria for any specific eating disorder (8).
Physical and Laboratory Findings

Laboratory and diagnostic testing is useful in evaluation of medical stability in patients with eating disorders. Most patients with eating disorders will have normal labs and diagnostic tests unless the disease is severe.

A complete cardiac work up is helpful as many cardiovascular complications can result from eating disorders. Changes to monitor for include: bradycardia, small left ventricle, congestive heart failure, hypotension and arrhythmias (1, 2). Occasionally the cardiac valves will sag, leading to mitral valve prolapse.

Electrocardiogram (ECG) is useful in determining any cardiac disturbance brought on by an electrolyte imbalance. Hypocalcaemia or hypomagnesaemia may lead to a prolonged QT intervals. Hypokalemia may cause T-wave inversion or flattening. Other electrolyte disturbances or myocardial ischemia may cause ST depression.

Abuse of ipecac syrup may lead to precordial pain, shortness of breath, generalized muscle weakness or increased heart rate. A temporary pacemaker may be necessary for the prevention of ventricular tachycardia in extreme cases.

Amenorrhea frequently accompanies eating disorders, especially AN. Low levels of body fat result in a decreased production of estrogen. This often leads to amenorrhea or missing menstrual periods. Abnormal hypothalamic-pituitary-gonadal axis disrupts the levels of plasma estradiol, leutenizing hormone, and follicle-stimulating hormone (1, 2). Anorexia is also associated with excessive amounts of cortisol which may contribute to bone loss.

Those with AN may not demonstrate the typically pattern of female fat distribution. They may also lack pubic hair, but most have the remaining body hair distribution.

Laboratory values typically remain normal until the disease is advanced. Laboratory findings to watch out for include hypoglycemia, hypokalemia, hyponatremia, leukopenia, neutropenia, anemia, and thrombocytopenia (1, 2, 4). If hypokalemia or metabolic alkalosis is present the clinician should consider that the anorectic patient may be purging through vomiting or diuretic abuse (1, 15). Hypercarotenemia, elevation of serum liver enzymes, elevated serum amylase, hypochloremia, hyperaldosteronism, elevated bicarbonate, hypomagnesemia, and hypophosphatemia may also be present (1, 2, 17). If amenorrhea is present rule out other causes by checking thyroid function, checking follicle-stimulating hormone and prolactin levels (2).

Urinalysis may show ketones suggesting starvation. In addition the specific gravity on urinalysis may be increased or there may be an elevated blood urea nitrogen (BUN) level, indicating dehydration. Euthroid sick syndrome – with a normal free T4, and elevated reverse T3 and essentially normal thyroid stimulating hormone – can occur in those with AN (7).

Bone density measurement should be considered as low bone mass is a complication of eating disorders, especially AN. Bone density is often low due to lack of estrogen, increased cortisol, malnutrition and lack of bone stress due to low body weight.
Table 1: Signs and Symptoms of Eating Disorders

- General malaise, insomnia
- Drowsiness, lethargy
- Muscle weakness
- Dizziness
- Weight fluctuation with high, low or normal weight. (AN is characterized by low weight)
- Hypothermia
- Swollen joints
- Siolodenitis (Chipmunk checks)
- Carpopedal spasm
- Dental caries/tooth enamel erosion
- Bloodshot eyes
- Pale, dry skin
- Poor skin turgor
- Red or calloused hands or fingers
- Swollen parotid glands, throat, and cheeks; inflamed uvula, tonsillar hyperplasia, sore throat
- Dull hair, hair loss or excessive hair growth
- Brittle nails
- Lanugo
- Abnormal urine specific gravity
- Tachycardia/hypotension
- Electrolyte abnormalities: low potassium, calcium, chloride, magnesium and sodium levels; high calcium level
- Acid base disturbances: Metabolic acidosis; metabolic alkalosis
- Dehydration
- Loose or watery stools alternating with constipation, chronic constipation or irregularity
- Chest pain, heartburn, dyspepsia and epigastric tenderness
- Inflamed rectal tissue, poor retraction of rectal muscles, abdominal cramps, hematemesis, melena
- Menstrual irregularity and/or amenorrhea

Complications

Eating disorders cause multiple complications. Restriction of food intake, not only sets the body up to binge, but also slows down the metabolism. Complications result from malnutrition, binge eating, purging behaviors and refeeding (4, 7).

Complications are more common as the disease becomes more severe or prolonged. Many of the complications are a direct result of malnutrition while other are related to the purging behaviors. Increased susceptibility to infections is related to poor nutrition. Stress fractures, osteopenia, osteoporosis are a result of a combination of poor calcium/vitamin D intake, low body weight and abnormal levels of hormones (particularly low estrogen and high cortisol). Bone
mass peaks in young adulthood and those with anorexia especially those who have missed menstrual periods due to the disease before age 20 are at increased risk for never reaching a normal peak bone mass. This condition may be irreversible. For those who are not afflicted with osteoporosis while suffering from AN, may be at risk later in life. Since the peak bone mass was never very high, when the individual ages and bone loss naturally starts to decline, they will reach osteopenic and osteoporotic levels sooner than those who never suffered from an eating disorder.

AN patients who also binge and purge may experience both anorectic and bulimic symptoms, compounding the medical consequences. Major complications associated with anorexia include cardiovascular dysfunction including cardiomyopathy, mitral valve prolapse, heart failure, pericardial effusions, arrhythmias, orthostatic hypotension, prolonged QT interval (15); endocrine abnormalities such as hypercortisolism, diabetes insipidus; and musculoskeletal disease such as osteoporosis. In addition, gastrointestinal disturbances, parotid and salivary gland hypertrophy, immune system deficiencies, electrolyte abnormalities, and hair and skin disorders may all occur (1, 2, 4, 16). Secondary amenorrhea affects over 90% of female patients (7, 8).

Frequent use of syrup of ipecac may lead to potentially fatal emetine cardiomyopathy.

Laxative abuse and the use of other purging behaviors may lead to gastrointestinal problems (1, 2, 4, 16), such as malabsorption and esophageal erosion. Frequent vomiting may be associated with dental erosions and dental caries and even Malory-Weiss tears. Sialadenosis may follow repetitive vomiting and can cause the checks to look puffy. The treatment is to stop the vomiting and the symptoms should abate. Enlargement of the parotid glands, constipation, delayed gastric emptying, gastric dilation, GI bleeding/peptic ulcer, loss of gag reflex, esophageal tearing, pancreatitis and excessive thirst/increased urination can all result from purging behaviors.

Abnormal bowel movements, constipation and diarrhea along with abdominal cramps are common with laxative abuse. The myenteric plexus may be injured by the regular use of stimulant laxatives leading to dependence. In addition, laxative use is an ineffective way to aid in weight loss as they are unproductive in reducing calories from foods which have been eaten.

Delayed gastric emptying is managed by treating the disease. Colonic transit normalizes after a few weeks of nutritional rehabilitation and adequate fluid intake (5).

Pregnant patients who suffer from AN are more likely to have miscarriage, preterm birth, low birth weight, obstetric complications and post-partum depression (12). Anorexia in pregnancy may result in anemia, poor bone development of the fetus, lower Apgar scores, increased mortality rates, increased risk of failure to thrive and increased risk of Caesarean birth. When the pregnant patient is afflicted with chronic ketosis from calorie restriction the fetus/child is more likely to have developmental delays, lower intelligence quotient and an increase in learning disabilities (12).
Surgery is more risky in the patient with eating disorders, especially AN (1, 2, 7, 10). AN patients often have decreased lung compliance and are risk for aspiration pneumonia. In addition, hypothermia is also a risk. Cardiac complication, especially cardiac dysrhythmias, often complicates the disease and may be more risky during or after a surgical procedure.

The lack of fat tissue reduces the amount of cushioning and may lead to neurological impairments such as peripheral nerve palsies and delayed deep-tendon reflexes. The nurse should take extra precaution to protect and pad bony prominences and joints. In addition, nurses should use watch for skin breakdown and avoid pressure on any part of the body.

Respiratory complications are not common, but may result in those who choose to use vomiting as a compensatory mechanism. These patients may aspirate, develop pneumonia, have respiratory arrest or develop pneumomediastinum.

Skin abnormalities happen after malnutrition sets in. Calluses or abrasions on the fingers/knuckles can occur due to repetitive self-induced vomiting. Dry, scaly skin may also be noted.

Growth may be stunted by eating disorders. Those who suffer with AN for over 2.5 years may have permanently stunted growth (25). The research that suggested this was from a small study and requires more study before a firm conclusion can be made.

Co-morbidity

Those with eating disorders often have other psychiatric diseases such as substance abuse, anxiety, cluster B (antisocial, borderline, histrionic, and narcissistic) and C (avoidant, dependent, and obsessive-compulsive) personality disorders. Personality traits that often accompanies eating disorders is aggression, promiscuity, impulsivity and perfectionism.

Substance abuse is common in eating disorders, especially BN. It needs to be looked for in all eating disorder patients. Those in the acute stage of withdrawal have particular medical concerns and should be monitored by someone with expertise in managing substance abuse and many should be hospitalized. Liver function tests and blood count should be watched. Those with substance abuse should be watched for self-harm and suicide.

Affective illnesses, such as depression, are also common in eating disorders. Antidepressants in treatment of eating disorders are a viable option for those with co-morbid depression. Anxiety often accompanies eating disorders.

Obsessive-compulsive disorder (OCD) commonly co-exists with BN, with symptoms of OCD continuing after symptoms of BN have improved or ceased (7, 10).

Treatment of Eating Disorders

Treatment of eating disorders requires multiple health care professionals including the psychiatrist, the primary care physician, the dietitian, the therapist, psychologist, nurses, nursing support staff, parents (if the patient is a minor), and other specialists as needed. As part of the initial plan the patient’s medical,
emotional, spiritual, cultural and educational needs are evaluated. Nursing interventions and goals are individualized as part of the overall interdisciplinary treatment plan. Ideally the head of the group is a psychiatrist specializing in eating disorders.

Goals of treatment include (1, 2, 7):

- Normalizing body weight
- Stabilizing and managing medical complications
- Providing nutritional counseling
- Behavioral and psychological counseling
- Decreasing symptoms with therapy
- Supportive nursing care
- Providing family therapy

In addition to targeting goals, treatment includes working with a dietitian for meal planning, monitoring eating patterns and nutritional advice. Working with a mental health professionals to improve self-esteem and body image and develop interventional strategies in another integral part of the treatment (18).

Regular team meeting are carried out to evaluate treatment. Treatment should create a secure, stable environment where the patient feels safe and accepted and the patients’ apprehension of fat is eased. The primary care provider, in collaboration with the psychiatrist, works to assure medical complications are monitored for. The psychiatrist considers the use of pharmacotherapy for some patients. No one treatment has been found to be more effective than another (11). Some patients with eating disorders recover without therapy.

Medical stabilization is the highest priority in patients with eating disorders. But once the patient is medically stable, it is important to work on the psychological state of the patient. The therapist/psychologist is critical to treating eating disorders. Patients need to have deviant thoughts replaced by positive thoughts. Methods of treatment include psychotherapy, group therapy, behavior therapy, interpersonal therapy (IPT), family therapy, hospitalization, supportive-expressive psychotherapy, nutritional rehabilitation, weight restoration and medication (11).

Several treatment modalities – often combination of therapies - are more successful in the treatment of BN (5, 7). However, cognitive-behavioral therapy is considered more effective than pharmacotherapy (5). Remember that medical stabilization is critical before emotional therapies are implemented.

Cognitive-behavioral therapy (CBT) helps patients reduced the feelings to purge and works on the perceptions of distorted body image (7, 19). CBT looks at belief systems that bring on maladaptive behaviors. It attempts gradual change and utilizes such techniques as journaling, exploring alternative positive behaviors, listening to positive self-statements and challenging attitudes and misperceptions (7, 11, 19). Encouraging patients to participate in other types of
therapy including individual, group and family therapy and nutritional counseling helps improve the disease.

In AN, a plan must be developed for refeeding and safely regaining the weight. Classification of patients – often based on percent of ideal body weight - is important as those with mild disease typically only require outpatient treatment. Inpatient care for the administration of total parenteral nutrition (TPN) is indicated for those with severe malnutrition or those who are refusing to eat. Those within 10% of ideal body weight and have a nominal distortion of body image have mild disease and can safely be treated as outpatients. Inpatient care should be considered for (9, 12, 15):

- Weight greater than 25% to 30% below ideal body weight
- Purging that is worsening
- Severe depression or suicidal ideation
- Rapid and severe weight loss refractory to outpatient treatment
- Refusal to eat
- Refractory to outpatient treatment
- Syncope or symptomatic hypotension
- Persistent hypokalemia
- Hypothermia
- Significant bradycardia
- Arrhythmias or a prolonged QT interval,

Hospitalization should safely restore weight, improve medical complications, address psychiatric problems, educate the patient, improve cognition and motivation, boost family support, and develop relapse prevention skills (10).

Hospitalization rarely cures the disease. Most patients do not want to be hospitalized and it often takes much prompting from the health care provider, family and therapist. Patients strongly identify with the disease and do not want to change. Health care providers need to be aware of these feeling as they are often the basis for power struggles between health care provider and patient.

Severely ill bulimics have special medical needs as many of their complications are related to the purging behaviors. Laxative abuse needs to be addressed. The duration, amount, and frequency of laxative use must be considered in the tapering plan (18). Severely ill patients may present to the ER and may warrant the use of thiamine, multivitamins, and magnesium and an evaluation of electrolyte abnormalities (4).

Acid reflux is common in eating disorders, particularly BN. They may spontaneously resolve, but often need the use of proton-pump inhibitors (esomeprazole, lansoprazole, omeprazole) to manage symptoms. Metoclopramide (Reglan) is often used to reduce vomiting.

Adequate fluids, fiber, and exercise should be encouraged. Exercise needs to be regulated in patients with a history of excessive exercise. Proper diet can improve constipation and if not successful than the use of a glycerin suppository or a nonstimulating osmotic laxative such as lactulose may be helpful (5).
Leg edema can occur, especially in BN, and should be treated with leg elevation and salt restriction (3). If this is unsuccessful a low dose aldosterone antagonist, such as spironolactone can be used. These are better than loop diuretics, which may precipitate hypokalemia.

Sialadenosis is treated by stopping vomiting, sucking on tart candies, and application of heat. If non-pharmacological measure fail to treat sialadenosis than the addition of oral pilocarpine (5mg three times per day) may be used (5).

Mild cases are medically stable can be treated with regular visits to the primary provider and to a mental health professional with expertise in eating disorders. Long term treatment of the anorexic by the mental health professional watches the patient with an eating disorder and encourages weight gain by challenging irrational thinking (9).

The goal of cognitive psychotherapy is for the patient to distinguish the link between their dysfunctional thought process and their maladaptive behaviors. Therapy will not be successful if thoughts and behaviors are changed alone. It requires that the underlying cause of the eating disorder is evaluated and addressed. Personal relationships must be explored and any dysfunction managed as this is often a contributing factor to the disorder. Sometimes a specific situation or event triggered the eating disorder and addressing this underlying cause is critical in the long-term management of the eating disorder.

Because of the complexity of the mind of a patient with an eating disorder, therapy should be done by an expert in patients with eating disorders. Therapy assists patients to identify triggers and risky times, improve anxiety management and develop new techniques to solve problem, improve self-esteem, challenge body image problems and negative thoughts (18). Therapy should not focus entirely on weight but on the psychological components that characterize the disease.

To adequately treat patients with eating disorders it is important to understand the psychological make up of the patient. This can vary from person to person. Some are solemn, well behaved, methodical and perfectionist. Others may be hypersensitive to rejection, feel irrationally guilty, impulsive and others are anxious.

Having a complete understanding of body weight patterns, weight control behaviors, eating behaviors and patterns, and rituals surrounding eating during the assessment process will assist with treatment options. Incorporating some of the patient’s rituals and food preferences improves treatment outcomes and offers refuge in a fear-provoking circumstance. Part of therapy includes educating the patient regarding relaxation methods to control guilt about eating or weight gain. Encouraging positive behaviors and consultations with a dietician and therapist is recommended.

Use extreme caution when discussing food, body image and weight with those with eating disorders. Many comments can set the patient with an eating disorder back.

Males are more of a challenge to identify and treatment is sometimes not as effective because treatment programs and support groups have been developed.
for females and men do not do as well in conventional settings (20). Special support groups are appropriate for the male who suffers from an eating disorder.

Physical exercise provides many benefits to the general population as well as those with eating disorders (19). It increases muscle mass, decreases anxiety and tension, improves self-concept, decreases depression, improves self esteem and body satisfaction, promotes a sense of well being, and promotes fitness. It also has some specific effects for the bulimic patient as it: decreases the binge-purge frequency diminishes bloating and distention, decreases laxative abuse, improves body satisfaction and reduces overeating. Use caution when recommending exercise for the bulimic or anorexic that uses exercise as an inappropriate compensatory mechanism (19).

One method to estimate target weight assumes that the ideal weight for a female who is five feet tall is 100 pounds; 5 pounds are added for each inch beyond 5 feet. In the male who is five feet tall the ideal weight is 106 pounds and 6 pounds are added for every inch beyond 5 feet. This method is not exact and may involve some variation, but can provide a general guideline. In AN, the target weight is within 90% of the ideal body weight. For AN a weight gain of 1 pound per week for outpatients and 2 to 3 pounds per week for inpatients is recommend (9, 15).

Refractory cases of AN, may require total parental nutrition (TPN) or nocturnal enteral feedings (6). When choosing a TPN solution prudence must be used as high-density protein supplements can be risky.

When the patient is medically unstable enteral feedings are often implemented. While medically stabilizing a patient it is important to reinforce positive behaviors by meeting with a dietician and therapist skilled in the management of anorexia.

Nurses and patients must be intimately involved in the development and evaluation of a treatment plan. An involved patient is much more likely to have success than one who does not care. In AN patients should be taught about preventing falls that may occur secondary to orthostatic hypotension. The evaluation of psychological symptoms is a critical part of the treatment plan as patients with eating disorders have illogical thoughts, which must be redirected.

When in an inpatient setting, food consumption should be highly structured (10). At the table there should be no discussing weight or food. Staff may eat with the patients to act as a role model for healthy eating. Usually, patients are not permitted in areas where food is prepared or stored, but as treatment progresses some patients may be included in food preparation and selection.

In an inpatient setting, body weight is typically monitored daily. For patients who purge the bathrooms should remain locked until it is determined that they are no longer purging. Randomly checking the weight will help establish if weights have been altered. Patients may or may not be privy to their weight; this is often a decision made by the team on an individual basis. The dietician should be involved routinely to offer guidance and emotional support. Exercise should focus on health promotion and fitness instead of weight loss.

A therapeutic relationship between the nurse and patient is critical to the patient’s recovery. Important traits to embody are: warmth, trust, commitment,
acceptance, empathy, genuineness, nonjudgmental attitude and a positive regard.

The nurse must examine his/her own believes regarding body image and weight to effectively work with this population. Nurses who are threatened by thinness can diminish the success of the therapeutic relationship. Nurses may not understand patient’s behaviors, feel confused or frustrated making effective nursing care less effective.

While those with AN may be more easily recognized, those with BN may appear without disease. It is important for the nurse to realize this so they are not misled by such misinterpretations (10).

Refeeding Syndrome and Complications of Treatment

Those with AN, are often on extreme calorie restriction. These patients need to be refeed, but it needs to happen with caution. Typically, refeeding diets are about 800 to 1000 kcal/day initially, and increased 200 to 300 kcal every 3 to 4 days. Caution must be used during refeeding to avoid the refeeding syndrome or any complications. The refeeding syndrome arises during the first 2 to 3 weeks of refeeding in patients with moderate and severe anorexia nervosa.

Refeeding syndrome describes complications such as cardiovascular collapse, cardiac arrest, and/or delirium in a malnourished person following refeeding when it contains an intake of highly caloric nutrients. The syndrome occurs because of electrolyte disturbances, particularly hypophosphatemia. Therefore, it is critical that electrolyte levels, especially phosphorus, are monitored every few days during the early phases of refeeding (9). After a few weeks and the patient is stable, less frequent monitoring is appropriate. In addition, the potassium level should be watched closely, since it is difficult to determine the exact amount for replacement.

Aggressive refeeding and swift weight gain may lead to cardiac arrhythmias including: conduction delays, atrial arrhythmias, and first and second-degree heart block (1, 2 10). Bradycardia with rates between 40 and 50 beats per minute and reduced systolic blood pressure are compensation mechanisms used by the body to conserve energy. Regular individualized clinical assessments – heart and respiratory rate, edema, weight gain and abdominal distention - and clinical judgment are critical in the initial weeks of refeeding.

Mitral valve prolapse often resolves spontaneously with weight gain. Most deaths in patients with anorexia nervosa are attributed to cardiac arrest secondary to arrhythmia which may be due to electrolyte abnormality or a prolonged QT interval. Consequently, electrocardiography should be used to help mange patients with eating disorders, and to help direct medication use. Medications that prolong a borderline long QT interval should be avoided. Amenorrhea does not necessitate treatment – patients typically recommence normal menstrual cycles within six months of attaining 90% of ideal body weight (9).

Pharmacological Treatment
The pharmacological treatment of eating disorders is challenging and less effective than many other psychological conditions. While it is unclear of the precise link between eating disorders and the serotonergic or noradrenergic systems, some eating disorder behaviors appear to improve with antidepressants. Antidepressants help prevent relapse and treat co-morbid psychiatric conditions such as depression, anxiety and OCD (9). Treatment often includes a combination of psychotherapeutic interventions as well as medications.

Caution must be used when prescribing medications to those with AN. Antidepressants help patients maintain weight, but are not as useful until weight normalizes. The anticholinergic side effects of tricyclic antidepressants amplify the threat of arrhythmia in anorexia that are already predisposed to arrhythmia.

Selective serotonin reuptake inhibitors are recommended in patients with persistent depressive, obsessive, or compulsive symptoms. At times, AN patients respond well to anti-anxiety agents, low-dose neuroleptics, or antipsychotic medications.

In BN, pharmacotherapy may be very helpful, especially in those with co-morbid psychiatric conditions. Selective serotonin-reuptake inhibitors (SSRIs), tricyclic antidepressants (TCAs), and monoamine oxidase inhibitors are effective (3, 10). SSRIs are better tolerated than TCAs. The SSRIs are effective in higher doses for the treatment of BN when compared to depression; for example, fluoxetine 60mg daily is the optimal dose as opposed to 20-40 mg for depression (3). Fluoxetine (Prozac) and sertraline (Zoloft) are approved by the Food and Drug Administration (FDA) for BN. Fluoxetine diminishes depression, incidence of binge-purge cycles and the rate of relapse in bulimics (3). The highest rate of relapse occurs in the first year of recovery with almost one-third of patients relapsing (5).

Other antidepressants should be used with some caution in patients with BN. Bulimics are vulnerable to seizures, a contraindication for bupropion therapy, so bupropion is not the ideal medication for the patient with an eating disorder. Monoamine oxidase inhibitors are infrequently used – if they are used it is typically under the care of a psychiatrist - because of the dietary tyramine restrictions and inclination for drug interactions.

The benzodiazepines are often used in the treatment of anxiety which commonly co-exists with eating disorders. They should be used with extreme caution in those with eating disorders as these medications are very addictive. Patients with eating disorders – particularly bulimics – are prone to addiction. In addition, it may cause respiratory depression (1).

Anticonvulsants and mood-stabilizing medications are occasionally used in the treatment of eating disorders (1).

Some clinicians consider the use of hormones in the treatment of eating disorders, especially anorexia. But, hormone replacement therapy is not advocated because of the reduced body fat needed for estrogen storage (12, 15). Calcium supplementation (1500 mg/day) along with vitamin D (400 IU/day) should be given to those with AN to help maintain bone mass (9).
Outcomes

Co-morbid mood disorder, a lower weight at referral, vomiting, bulimia and purgative abuse and later age or earlier age at onset suggests a poor prognosis in a patient with AN (1, 2, 3, 15). Those who are self-directed are more likely to recover from AN than those whose character trait entails high harm avoidance. Those who follow up regularly and those who get treated earlier are more likely to recover.

Twenty percent of untreated anorexics die (14). Typically, death is due to a medical complication such as cardiac arrest, electrolyte imbalance or suicide.

AN is linked with a poor prognosis. A complete cure is not common with AN, many patients relapse at some point in their life (16). Only about half of patients completely recover and 20% are chronic relapers with one-third improving to some extent (1). Deviant behaviors and thoughts may persevere in the mind of the anorexic; but, the patient should aim to shape a healthy novel identity.

In BN, early intervention is a key factor in predicting a good outcome. Those who are substance abusers, have a cluster B personality disorder low self-esteem, severe symptoms at onset of illness, history of obesity and body weight fluctuations, frequent vomiting, impulsive behaviors are more likely to have a poor outcome (22). For those who improve their body image disturbance and eating behaviors (10) have a good outcome. Certain factors have no bearing on outcome in BN and include: age at presentation, socio-economic status and gender. The long-term course of bulimia nervosa lacks clinical data, but, short-term outcomes are steadily improving (22).

Mortality rates for BN are not as high as AN but may be up to 5% if left untreated or if treatment is delayed (14). Timely treatment improves prognosis with about two-thirds of patients avoiding a more serious course with early intervention (22).

Relapse is common in bulimia nervosa. One goal of treatment is to reduce the frequency and intensity of relapse. BN is a chronic disease that may never completely go away and the impulse to binge and purge may be present indefinitely. Thirty-five percent of BN patients continue with the disease after five years (22). While, approximately 70% of bulimics partially recover after 10 years, but almost 25% remain refractory to treatment in the same time period (22). It is important to encourage social support as many patients with BN or AN are social isolated and fighting a chronic disease is more challenging without social support (22).

Conclusion

Increased knowledge about screening of patients for eating disorders will assure more individuals who suffer with the disease are diagnosed and treated and consequently improve outcomes. The primary care clinician follows the patients through the course of this disease, but treatment should involve a multidisciplinary approach.

Eating disorders are complex diseases affecting largely females who are fixated with being in command of their diet and body weight. Many deny that they are sick and resist interventions. They feel accomplished by weight loss
and do not see the condition as dangerous and/or some anorexics perceive themselves fat while they are quite under weight.

The etiology of eating disorders is complex and interlinked. It is critical to diagnose this disease early so early intervention can be implemented. They are chronic conditions that affects both the body and mind and drives many into social isolation and feelings of guilt and shame.

Those with advanced or severe disease should be treated in inpatient units, but those with less severe disease can be treated as an outpatient. Pharmacological intervention may be helpful for some patients, but prescription medications should be managed by someone with expertise in working with individuals with eating disorders. A therapeutic relationship – while at times difficult to develop in patients with eating disorders - between patient and client is an essential part in the treatment and recovery of patients with eating disorders.

Complications are common and severe. In the bulimic medical complications stem mainly from the purging process, which can involve diuretic abuse, self-induced vomiting, inappropriate use of enemas or laxatives, or excessive exercise.

Early intervention improves prognosis and treatment delay is associated with poor outcome. Little is known about techniques to prevent eating disorder. Psychotherapy is likely the most important aspect of care and cognitive/behavioral therapy is the most common. Therapy looks to modify hunger, chaotic eating, maladaptive thinking patterns, maladaptive behaviors, insufficient caloric intake, and extreme fear of expressing impulses and feelings, particularly feelings of anger and sadness. Cognitive behavior therapy in combination with pharmacotherapy is often used in the treatment of eating disorders.

There are multiple interventions that nurses can do to reduce the incidence and improve the treatment of eating disorders.

- Speak out against society’s fascination with extremely thin models
- Assess children’s and adolescent’s diet habits, risk for dieting, and body image disturbance.
- Educate parents about the relationship between parents’ dieting behaviors and children’s attitudes about weight loss.
- Assess all patients for eating disorders and refer those at risk.
- Build therapeutic relationship with girls and teens. This will help in gaining insight into how they are handling the changing body image.
- Help patients evaluate medical information especially information on the world wide web.
- Teach females, especially adolescents, about their susceptibility of media images.
- Teach males how to be more durable in the face of negative comments about weight.
- Teach parents to monitor which websites their children visit as there are many “pro-eating disorder” websites.
- Teach fathers about the fact that children are susceptible to eating disorders based on negative comments about weight by the father.
• Parents should not over emphasize thinness, body shape and beauty in the home.
• Encourage parents to talk to their children about body images in the media and help them understand that there are a variety of body shapes and the slender body shape is not necessarily the most ideal body type for everyone.
• Teach patients about the importance of nutrition on pregnancy.

Eating disorders are linked to significant morbidity and mortality and has become an important health issue. Improvements in medical science should improve the treatment of eating disorders. Further research is needed to evaluate and recommend treatment modalities for further improving the prognosis of these disorders. Those with eating disorders need to be identified and need treatment; successfully identifying and treating someone may be lifesaving.

References


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