

**ABSTRACT**

Eating disorders are complex psychological problems with potentially serious medical complications. Early diagnosis with intervention and earlier age at diagnosis are correlated with improved outcomes. A complete assessment includes a detailed medical history, physical examination and laboratory investigations. Medical problems presenting with eating problems/weight loss should be excluded. A multidisciplinary team approach is the recommended model of care.

SFP 2007; 33(4): 37-40

**INTRODUCTION**

Eating disorders are complex psychological problems with potentially serious medical complications. Early diagnosis with intervention and earlier age at diagnosis are correlated with improved outcomes<sup>1</sup>. Family physicians serve as primary care providers for a large percentage of adolescents, and thus play a critical role in diagnosing these disorders. By asking appropriate questions and providing relevant information, the family physician may be able to refer the patient to treatment necessary for recovery. This article focuses on recognition and diagnosis of eating disorders in primary care.

**EPIDEMIOLOGY**

Eating disorders occur most commonly in adolescents and are 10 times commoner in females<sup>2</sup>. Locally, they occur in all ethnic groups and socioeconomic classes<sup>3</sup>. The main types of eating disorders are anorexia nervosa (AN) and bulimia nervosa (BN).

In young women, the risk of developing AN is 0.3 to 3.7 percent while the risk of developing BN is 1 to 4 percent<sup>2</sup>. Mortality for AN is estimated at 4 to 10 percent<sup>2</sup>. Frequent dieting and desire for weight loss occur much more commonly than overt eating disorders. A 1997 study of Chinese Singaporean youths found that 53% of females and 28% of males wanted to be thinner<sup>4</sup>. Many adolescents who do not meet strict diagnostic criteria for eating disorders have disordered eating patterns, which can significantly impact on health too. The distinction between normal dieting and disordered eating is based on whether it causes significant physical, social or psychological problems.

**ETIOLOGY**

Risk factors for developing an eating disorder include participation in activities that promote thinness, such as ballet dancing, modeling, and athletics<sup>5</sup>, and certain personality traits, such as low self-esteem, a negative self concept, difficulty resolving conflict, and being a perfectionist<sup>6</sup>.

A family history of eating disorders is also a risk factor. First-degree female relatives of patients with AN and BN have higher rates of eating disorders compared with relatives of control subjects. In addition, relatives of individuals with AN and BN have increased rates of eating disorders that do not meet full diagnostic criteria compared with relatives of control subjects<sup>7</sup>.

**DIAGNOSIS**

The core feature of AN is a refusal to maintain body weight at or above 85 percent of expected weight, as defined by age-appropriate body mass index charts. Patients typically use caloric restriction or excessive exercise to control emotional need or pain, and they are terrified of becoming overweight. BN is characterised by uncontrollable binge-eating episodes, often followed by purging behaviours such as vomiting or the use of laxatives.

Both disorders are characterised by a disturbance in the perception of body shape and an undue influence of body weight and shape on self-evaluation and self-image. Below are the DSM IV diagnostic criteria for AN and BN<sup>8</sup>:

Diagnostic Criteria for Anorexia Nervosa:

1. Refusal to maintain body weight at or above a minimally normal weight for age and height.
2. Intense fear of gaining weight or becoming overweight, even though underweight.
3. Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight.
4. Amenorrhea in postmenarchal females, i.e., the absence of at least three consecutive menstrual cycles.

Additionally, there are 2 subtypes of AN:

1. **Restricting type** – during the current episode, the patient has not regularly engaged in binge eating or purging (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas).
2. **Binge-eating/purging type** – during the current episode, the patient has regularly engaged in binge eating or purging.

Patients with binge-eating/purging-type anorexia are underweight compared to bulimics who are typically of normal weight or overweight.

Diagnostic criteria for Bulimia Nervosa:

1. Recurrent episodes of binge eating. An episode of binge eating is characterised by both of the following: (1) In a discrete period of time (e.g., within any two-hour period), eating an amount of food that is larger than what most people would eat during a similar period of time and under similar circumstances, (2) A sense of lack of control over eating during the episode.
2. Recurrent inappropriate compensatory behavior in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or exercising excessively.
3. The binge eating and inappropriate compensatory behaviors both occur, on average, at least twice a week for three months.
4. Self-evaluation is unduly influenced by body shape and weight.
5. The disturbance does not occur exclusively during episodes of AN.

BN also has two subtypes:

1. **Purging type** – during the current episode, the patient has regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.
2. **Nonpurging type** – during the current episode, the patient has used inappropriate compensatory behaviors, such as fasting or exercising excessively, but has not regularly engaged in self-induced vomiting or the use of laxatives, diuretics, or enemas.

Patients with nonpurging-type bulimia also might severely restrict calories or exercise excessively to lose weight but do not meet the weight criteria for diagnosis of AN.

Many patients, particularly younger patients, have combinations of eating disorder symptoms that cannot be strictly categorised as AN or BN and are technically diagnosed as eating disorders not otherwise specified (EDNOS). It is also important to aggressively treat patients who have traits of eating disorders but who do not meet the full criteria for anorexia or bulimia.

**DIFFERENTIAL DIAGNOSIS**

Before making a diagnosis of an eating disorder, medical problems presenting with eating problems/weight loss should be excluded. E.g. diabetes, malignancy, hyperthyroidism, inflammatory bowel disease, immunodeficiency, malabsorption, chronic infections and Addison's disease. Most patients with a medical condition that leads to eating problems express concern over their weight loss. However, patients with an eating disorder typically have a distorted body image and express a desire to be underweight.

Psychiatric co morbidity such as affective disorders, obsessive-compulsive disorder, somatisation disorder, and substance abuse are very common.

Lifetime co-occurring major depression or dysthymia has been reported in 50%–75% of patients with AN and BN<sup>1</sup>.

Rates of anxiety disorders have been reported as high as 60%, most commonly generalised anxiety disorder, social phobia and obsessive compulsive disorder<sup>1</sup>. Substance abuse prevalence is estimated at 12 to 18 percent in patients with anorexia and 30 to 70 percent in patients with bulimia<sup>9</sup>.

Co-occurring personality disorders are frequently found among patients with eating disorders, with estimates ranging from 42% to 75%. The associations between BN and Cluster B and C disorders (particularly borderline personality disorder and avoidant personality disorder) and between AN and Cluster C disorders (particularly avoidant personality disorder and obsessive-compulsive personality disorder) have been reported<sup>10</sup>.

**SCREENING TOOLS**

The medical history is the most powerful tool for diagnosing eating disorders as physical and laboratory findings might be normal, especially early in the course of eating disorders.

A number of comprehensive psychiatric interviews can be used to diagnose eating disorders but these are impractical in the primary care setting. One promising screening tool is the SCOFF questionnaire<sup>11</sup>.

- κ Do you make yourself **Sick** (induce vomiting) because you feel uncomfortably full?
- κ Do you worry that you have lost **Control** over how much you eat?
- κ Have you recently lost more than **One** stone (6.4 kg) in a three-month period?
- κ Do you think you are too **Fat**, even though others say you are too thin?
- κ Would you say that **Food** dominates your life?

Every yes answer scores one point; a score  $\geq 2$  indicates a likely case of AN or BN (sensitivity: 100 percent; specificity: 87.5 percent)<sup>11</sup>. Because of its 12.5 percent false-positive rate, this test is not sufficiently accurate for diagnosing eating disorders, but it is an appropriate screening tool.

Other screening questions that might be helpful are listed below:

- κ How many diets have you been on in the past year?
- κ Do you think you should be dieting?
- κ Are you dissatisfied with your body size?
- κ Do you worry excessively about your weight?
- κ Does your weight affect the way you think about yourself?

Positive response should prompt further investigation with a more comprehensive questionnaire. When screening patients, it is important to take their developmental stage into account as some questions might be inappropriate for younger patients.

**HISTORY AND PRESENTING SYMPTOMS**

Establishing therapeutic alliance with the patient is of utmost importance, especially when the patient does not perceive a problem. Talking to the patient individually, as well as talking

to the family and patient together, is appropriate. Corroborative history is essential as patients with AN will typically be unconcerned about significant weight loss and deny symptoms. With adolescent patients, questions must be asked in a developmentally appropriate, precise, nonjudgmental way<sup>12</sup>.

When taking a medical history, it is important to obtain a weight history, dietary history and to ask about excessive exercise and the use of laxatives, slimming pills or diuretics. The patient's school health booklet is a useful source of information about the patient's general growth and premorbid weight. Abnormal growth curves in children/ adolescents can be revealing. A patient who initially had normal growth parameters might stop gaining weight or might lose weight while height increases. Eventually, height will be affected, and growth will diminish.

It is also imperative to enquire about psychiatric comorbidities such as depression and to assess the risk of suicide and self-harm.

Patients with eating disorders can also present with a wide range of physical symptoms. Those with milder illness might have nonspecific complaints, such as fatigue, dizziness, or lack of energy. Other symptoms that might be reported include amenorrhea, sore throat, gastroesophageal reflux disease, abdominal pain, cold intolerance, constipation, polyuria, polydipsia, and palpitations.

## PHYSICAL EXAMINATION

Complications of AN and BN can affect almost every organ system. Early in the disorder, many patients might have a completely normal physical examination. It is essential to stress to patients and their family that a normal physical examination does not exclude an eating disorder.

Accurate weight measurements are important in diagnosing an eating disorder. Scales should be located in a private area, and comments about weight should be minimised and kept discreet. Some patients with eating disorders may avoid revealing their true weight by drinking extra fluids, putting weights in their pockets, or wearing extra layers of clothes before weighing.

Vital signs might be abnormal and patients may have bradycardia, orthostatic hypotension, and hypothermia. Abnormal skin findings include dry skin, lanugo hair, loss of subcutaneous fat and hypercarotenemia (an orange hue caused by increased ingestion of carrots). Patients who induce vomiting might have calluses on the dorsum of the dominant hand (Russell's sign), as well as loss of dental enamel. Salivary gland enlargement (chipmunk cheeks) is another sign of purging behavior.

The gastrointestinal system can also be adversely affected. Decreased bowel motility can lead to abdominal distension. Gastroesophageal reflux and pancreatitis can cause epigastric pain. Stools might be palpable in the lower left quadrant if the patient is constipated.

Pulmonary complications of eating disorders are rare, but vomiting can cause a pneumomediastinum. Pulmonary edema

may occur in patients who undergo refeeding. In addition to bradycardia, cardiac findings may include acrocyanosis and decrease in overall heart size and stroke volume.

## LABORATORY EVALUATION

Laboratory findings might be completely normal, but targeted laboratory testing can be helpful to rule out medical illness. All patients with eating disorders should have the following laboratory investigations:

**Complete blood cell count.** Leucopenia is not uncommon and in severe cases, pancytopenia might be present<sup>13</sup>.

**Serum electrolytes.** Blood glucose levels might be low. Hypochloremic, hypokalemic, or metabolic alkalosis might be present in patients who purge. Hypokalemia might also result from diuretic and laxative use. Severe hypokalemia can lead to cardiac arrhythmias, muscle weakness, or confusion. Hyponatremia might occur with excessive water intake and hypophosphataemia may occur during refeeding.

**Liver function tests.** There may be occasional abnormal liver function tests and serum amylase may be elevated with purging.

**Thyroid-function test.** Findings might be consistent with the sick euthyroid syndrome, with low triiodothyronine and thyroxine levels and a normal thyroid-stimulating hormone level.

**Electrocardiogram.** Findings include bradycardia, arrhythmias, QTc prolongation or hypokalaemia-associated ST depression.

**Dual-Energy X-ray Absorptiometry (DEXA) scans** are indicated in patients amenorrhoeic for more than six months. Decreased estrogen levels and inadequate micronutrients, especially during adolescence when bone strength is increasing, can lead to clinically significant osteopenia after as few as six months of illness<sup>14</sup>.

## TREATMENT

A multidisciplinary team approach, involving paediatricians, psychiatrists, psychologists, dietitians, social workers/family therapists, nurses, occupational and physiotherapists, is the recommended model of care.

Treatment intensity and setting depends on the severity of the illness. Patients with mild illness can be managed on an outpatient basis. Patients who are medically or psychiatrically unstable require inpatient treatment.

The following are guidelines for inpatient admission<sup>15</sup>:

1. Medical instability: Heart rate <50 beats per minute; orthostatic blood pressure changes; (>20 bpm increase in heart rate or >20mmHg drop in); blood pressure <80/50 mm Hg; hypokalemia; hypophosphatemia or hypomagnesemia.
2. Active suicidal plans.
3. Weight < 85 percent; acute weight decline with food refusal.

4. Poor motivation; preoccupied with intrusive repetitive thoughts; uncooperative with treatment or cooperative only with highly structured environment.
5. Any existing psychiatric disorder that would require hospitalisation.
6. Needs supervision during and after all meals, or nasogastric/special feeding.
7. Compulsive, uncontrolled purging or exercising.
8. Severe family conflict or absence of family so as unable to provide structured treatment in home.

The aims of treatment include attainment and maintenance of a healthy weight, management of physical complications, management of co morbid psychiatric illness, and prevention of relapse. Helping the patient change core dysfunctional cognitions, motives, and feelings related to the eating disorder and educating the patient about proper health and nutrition also are important.

## PROGNOSIS

The prognosis of patients with eating disorders is variable. Among adolescents with anorexia nervosa, approximately 50% recover, 20% are improved but continue to have residual symptoms, and 10%–20% develop chronic anorexia nervosa<sup>16</sup>. Mortality rates in eating disorders, specifically anorexia nervosa, are among the highest in the mental disorders. Patients with anorexia have a mortality rate six times that of peers without anorexia<sup>1</sup>.

The overall short-term success rate for bulimic patients receiving psychosocial treatment or medication has been reported to be 50%–70%<sup>1</sup>. Relapse rates of 30%–85% have been reported for successfully treated patients at 6 months to 6 years of follow-up<sup>17</sup>.

A shorter duration of illness and younger age at onset has been associated with a better outcome. Lower initial minimum weights, vomiting, binge eating, purgative abuse, chronicity of illness, and obsessive-compulsive personality symptoms are reported to be unfavorable prognostic features<sup>16</sup>. In general, adolescents have better outcomes than adults and younger adolescents have better outcomes than older adolescents.

Because of the severity of these illnesses and the improvement in outcomes with early diagnosis, the family physician can play a crucial role in helping patients recover from eating disorders by detecting them at an early stage.

## REFERENCES

1. Herzog DB, Nussbaum KM, Marmor AK. Comorbidity and outcome in eating disorders. *Psychiatr Clin North Am* 1996;19:843-59.
2. Hoek HW, van Hoeken D: Review of the prevalence and incidence of eating disorders. *Int J Eat Disord* 2003; 34:383-96.
3. Lee HY, Lee EL, Pathy P. Anorexia Nervosa in Singapore: an eight-year retrospective study. *Singapore Med J* 2005; 46(5): 210-5.
4. Wang MC, Ho TF, Anderson N, Sabry ZI. Preference for thinness in Singapore – a newly industrialized society. *Singapore Med J* 1997; 38: 332-5.
5. Mehler PS. Diagnosis and care of patients with anorexia nervosa in primary care settings. *Ann Intern Med* 2001;134:1048-59.
6. Kreipe RE, Birndorf SA. Eating disorders in adolescents and young adults. *Med Clin North Am* 2000;84:1027-49.
7. Strober M, Freeman R, Lampert C, Diamond J, Kaye W: Controlled family study of anorexia nervosa and bulimia nervosa: evidence of shared liability and transmission of partial syndromes. *Am J Psychiatry* 2000; 157:393-401.
8. American Psychiatric Association. Diagnostic and Statistical Manual 4th ed. Washington DC: American Psychiatric Press Association 1994: 544-5.
9. Vastag B. What's the connection? No easy answers for people with eating disorders and drug abuse. *JAMA* 2001;285:1006-7.
10. Ilkjaer K, Kortegaard L, Hoerder K, Joergensen J, Kyvik K, Gillberg C: Personality disorders in a total population twin cohort with eating disorders. *Compr Psychiatry* 2004; 45:261-7.
11. Morgan JF, Reid F, Lacey JH. The SCOFF questionnaire: assessment of a new screening tool for eating disorders. *BMJ* 1999;319:1467-8.
12. Coulehan J, Block M. A different silhouette – pediatric and geriatric interviewing. In: *The medical interview: mastering skills for clinical practice*. 3d ed. Philadelphia: Davis, 1997;144-7.
13. Carney CP, Andersen AE. Eating disorders. Guide to medical evaluation and complications. *Psychiatr Clin North Am* 1996;19:657-79.
14. Becker AE, Grinspoon SK, Klibanski A, Herzog DB. Eating disorders. *N Engl J Med* 1999;340:1092-8.
15. American Psychiatric Association. Practice Guideline for the Treatment of Patients with Eating Disorders. 3rd ed. 2006. 37-9.
16. Steinhausen HC: The outcome of anorexia nervosa in the 20th century. *Am J Psychiatry* 2002; 159:1284-93.
17. Keel PK, Mitchell JE: Outcome in bulimia nervosa. *Am J Psychiatry* 1997; 154:313–21.

## LEARNING POINTS

- o Patients with binge-eating/purging-type anorexia are underweight compared to bulimics who are typically of normal weight or overweight.
- o Before making a diagnosis of an eating disorder, medical problems presenting with eating problems/weight loss should be excluded.
- o The medical history is the most powerful tool for diagnosing eating disorders as physical and laboratory findings might be normal, especially early in the course of eating disorders.
- o The aims of treatment include attainment and maintenance of a healthy weight, management of physical complications, management of co morbid psychiatric illness, and prevention of relapse.
- o Pulmonary complications of eating disorders are rare, but vomiting can cause a pneumomediastinum. Pulmonary edema may occur in patients who undergo refeeding. In addition to bradycardia, cardiac findings may include acrocyanosis and decrease in overall heart.