

## Eating Disorders: Reviews on Update in Diagnosis and Management

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### Introduction:

Eating disorders are common medical behavioral disorders associated with significant physical, mental and social morbidity and mortality.<sup>1</sup> The prevalence of eating disorders are estimated to occur in 5-10 million young adult women and one million males in US, but the actual figure is much bigger.<sup>2</sup> People from all cultures and backgrounds are suffering from eating disorders.<sup>3</sup> Eating disorders are frequently missed by primary care clinicians because patients always feel shyness to discuss their behaviors related to food. Only a high degree of suspicion and screening questions can detect eating disorders at initial stage. The

### Abstract

Eating disorders are common and frequently missed behavioral disorders associated with significant physical, mental and social morbidity and mortality. Among psychiatric illness, mortality rate of anorexia nervosa and bulimia nervosa is about 10% and 1% at 10 years of diagnosis respectively. All clinicians should ask about eating habits (such as dieting, binge-eating, and weight control behaviors etc) and weight concerns in high risk groups, even when they have no concerns about eating or weight. The DSM-5 and ICD-11 list 6 distinct eating disorders: 1) Anorexia nervosa, 2) Bulimia nervosa, 3) Binge-eating disorder (BED), 4) Avoidant/restrictive food intake disorder (ARFID), 5) Rumination disorder and 6) Pica. Since the incidence of eating disordered patients in appears to be rising, it is a time demanding issue to deliver multidisciplinary treatment for them. As eating disorders frequently involve multi-system disorders such as gastrointestinal, neurological and endocrine, early screening and assessment of patients with eating disorders is essential. Treatments for eating disorders depend on its types and focus on behavioral change, targeting normalizes the weight and eating habits. Depending on the severity of malnutrition and associated medical conditions, eating disorders may be treated with patient education, cognitive behavioral therapy (CBT), family-based treatment (FBT), specialist supportive clinical management (SSCM) and Pharmacotherapy (TCAs, MAOIs, and SSRIs).

**Keywords:** Eating disorder, DSM-5 diagnostic criteria, Complication, Treatment

incidence of bulimia nervosa is decreasing and it is relatively the same in anorexia nervosa but among younger groups it to be going up.<sup>4</sup> Among psychiatric illness, anorexia nervosa has the highest mortality rate, about 10% at 10 years of diagnosis may be due to suicide, infection or other effects of chronic starvation.<sup>5</sup> Mortality due to bulimia nervosa is less, about 1% at 10 years of diagnosis.<sup>6</sup>

### Risk Factors:

None is protected for developing an eating disorder but certain personalities are at higher risk. Females are more prone to develop anorexia nervosa and bulimia nervosa than males and it

commonly occurs at teenage and young adults.<sup>7</sup> People of certain professions like media reporting, acting, dancing, modeling etc are at higher risk. Some studies found that early life physical or sexual abuse acts as a predisposing factor for developing eating disorders.<sup>8</sup> Both anorexia nervosa and bulimia nervosa are more common among family members than in the general population and atypical eating disorders (i.e., binge-eating) also have familial heritage.<sup>9</sup> Serotonin dysregulation is an associated factor of eating disorders. Studies suggest that serotonin promotes satiety responses, which is impaired in bulimics.<sup>10</sup> Compulsive exercise also related to changes of serotonin regulation promoted by food restriction.<sup>11</sup> Serotonin dysregulation also found in several psychiatric disorders occurring in bulimia or close to bulimia such as substance abuse, depression, anxiety, and suicidality etc.<sup>12-14</sup>

#### Screening of Eating disorders:

Clinicians should methodically screen for eating disorders as part of a general health assessment. All clinicians should ask about eating habits (such as dieting, binge-eating, and weight control behaviors etc) and weight concerns in high risk groups, even when they have no concerns about eating or weight. Direct questioning by the provider is necessary to detect the unnoticed symptoms of an eating disorder.

A 5-questions assessment tool, the 'SCOFF' may be helpful in identifying eating disorders, especially anorexia nervosa and bulimia nervosa.<sup>15</sup> A recent meta-analysis of 25 studies using SCOFF questionnaire, found a sensitivity of 86% and a specificity of 83%.<sup>16</sup> Eating disorders are difficult to prevent, but early recognition and treatment are recommended to improve outcomes.

#### SCOFF Questionnaire:<sup>15</sup>

1. Do you ever make yourself sick because you feel uncomfortably full?
  2. Do you worry you have lost control over how much you eat?
  3. Have you recently lost more than one stone (14 lb) in a 3-month period?
  4. Do you believe yourself to be fat when others say you are too thin?
  5. Would you say that food dominates your life?
- [1 point for every "yes" answer; a score  $\geq 2$  indicates probable anorexia nervosa or bulimia nervosa]

#### Types of Eating Disorder:

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)<sup>17</sup> and the International Classification of Diseases, 11th Revision (ICD-11)<sup>18</sup> list 6 distinct eating disorders which are very similar in both manuals but not quite identical. According to DSM-5, eating disorders are 1) Anorexia nervosa, 2) Bulimia nervosa, 3) Binge-eating disorder (BED), 4) Avoidant/restrictive food intake disorder (ARFID), 5) Rumination disorder and 6) Pica.

- 1) **Anorexia nervosa:** anorexia nervosa is characterized by persistent restriction of food intake resulting in maintenance of a body weight below the normal range for the person's age and height, fear of increasing weight or becoming fat despite in normal/ underweight and a disturbance in the way one's weight or shape is perceived.<sup>19</sup>

#### DSM-5 Diagnostic Criteria for Anorexia Nervosa.<sup>17</sup>

- A. Restriction of energy intake relative to requirements, leading to a significant low body weight in the context of the age, sex, developmental trajectory, and physical health.
- B. Intense fear of gaining weight or becoming fat or persistent behavior that interferes with weight gain.
- C. Disturbed by one's body weight or shape, unduly influenced by body weight or shape, or persistent lack of recognition of seriousness of low bodyweight.

#### Specified whether:

**Restricting type:** During last 3 months, has not regularly engaged in binge-eating or purging.

**Binge-eating/purging type:** During last 3 months, has regularly engaged in binge-eating or purging.

Mild: BMI  $\geq 17$  kg/m<sup>2</sup>,  
 Moderate: BMI 16–16.99 kg/m<sup>2</sup>,  
 Severe: BMI 15–15.99 kg/m<sup>2</sup>,  
 Extreme: BMI  $< 15$  kg/m<sup>2</sup>

- 2) **Bulimia nervosa:** bulimia nervosa is characterized by recurrent episodes of binge-eating along with exaggerated compensatory behaviors aimed at preventing weight gain, such as self-induced vomiting. Bulimia nervosa is also associated with self-evaluation unduly influenced by body shape and weight.<sup>20</sup>

**DSM-5 Diagnostic Criteria for Bulimia Nervosa.<sup>17</sup>**

- A. Recurrent episodes of binge eating: An episode is characterized by both of the following:
1. Eating, in a discrete period of time (within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and circumstances
  2. A sense of lack of control over eating during the episode.
- B. Recurrent inappropriate compensatory behaviors to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, enemas; fasting; or excessive exercise.
- C. The binge eating and inappropriate compensatory behaviors both occur, on average, at least once a week for 3 months.
- D. Self-evaluation is unduly influenced by body shape and weight.
- E. The disturbance does not occur exclusively during episodes of anorexia nervosa.

- 3) **Binge eating disorder:** BED defined as recurrent episodes of binge eating (i.e., eat a large volume of food in a brief period with a sense of loss of control while eating) associated with severe distress about the eating behavior.<sup>20</sup>

**DSM-5 Diagnostic Criteria for Binge-Eating Disorder:<sup>17</sup>**

- A. Recurrent episodes of binge eating. An episode of binge is characterized by both of the following:
1. Eating, in a discrete period of time (within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and circumstances
  2. A sense of lack of control over eating during the episode.
- B. The binge episodes are associated with 3 or more of the following:
1. Eating much more rapidly than normal
  2. Eating until feeling uncomfortably full
  3. Eating large amounts of food when not feeling hungry.
  4. Eating alone because of feeling embarrassed by how much is eating
  5. Feeling disgusted, depressed, or very guilty afterward
- C. Marked distress regarding binge eating is present.
- D. The binge eating occurs, on average, at least once a week for 3 months.
- E. The binge eating is not associated with recurrent use of inappropriate compensatory behavior as in bulimia nervosa and does not occur during the course of bulimia nervosa or anorexia nervosa.

- 4) **Avoidant/restrictive food intake disorder:** ARFID is characterized by the avoidance of foods or specific foods, based on their sensory qualities and is associated with marked nutritional disturbances of psychosocial functioning.
- 5) **Rumination disorder:** This disorder is characterized by repeated regurgitation of food that has been eaten.
- 6) **Pica:** Pica is characterized by the persistent ingestion of nonnutritive and nonfood materials.

**Differential Diagnosis (DD):**

The DDs for anorexia nervosa includes medical and psychiatric conditions associated with weight loss like chronic infections, cancer, intestinal diseases, endocrinopathies and depression etc. The DDs related to bulimia nervosa include diseases that cause vomiting or diarrhea.

**Associated conditions:**

Persons with anorexia nervosa, bulimia nervosa, and BED are commonly suffering from some degree of depression. High rate of suicide, anxiety disorders and obsessive-compulsive disorder are frequently associated with anorexia nervosa. Substance, alcohol and illicit drug abuse are common among persons who binge or purge.

**Complications of Eating Disorders:**

The complications of eating disorders vary according to the type of the eating disorders.

1) **Electrolyte Imbalances:**

Electrolyte abnormalities are common in eating disorders due to fluid loss and restriction. The most common complication is hypokalemia cardiac because of self-induced vomiting and diuretic or laxative abuse. Though serum level is normal, intracellular low potassium is enough to create symptoms such as constipation, myopathy and nephropathy. Hypomagnesaemia is common and may be a restoring factor of potassium.<sup>21</sup> Hypophosphatemia can occur due to oral or parenteral refeeding, vomiting, excessive exercise, laxative, diuretic, or antacid use and binge-eating.<sup>22, 23</sup>

2) **Cardiovascular abnormalities:**

Cardiovascular problems are particularly as a result of electrolyte abnormalities. Bradycardia, hypotension, orthostatic hypotension,

dizziness, fainting and ventricular arrhythmias leading to death often occur as a result of starvation and dehydration.<sup>24</sup>

3) **Gastrointestinal disorders:**

Gastrointestinal complications include submandibular and parotid swelling, esophagitis, esophageal spasm, tear and potentially fatal ruptures occurring from constant vomiting habit. Acute pancreatitis, loss of peristalsis, delayed gastric emptying, increased transit time, constipation, IBS, steatorrhea, and melanos coli may occur as a result of binge eating, food restriction, laxative abuse, electrolyte imbalance and dehydration.<sup>24</sup>

4) **Endocrine dysregulation:**

Hypothalamic-Pituitary-Adrenal axis: Sustained elevations of cortisol as a result of starvation have been documented in anorexic patients in multiple studies; along with proportionate decreased of DHEA and androstenedione but cortisol level remains normal in bulimia nervosa.<sup>25</sup>

Blood Sugar Metabolism and Diabetes Mellitus: A group of anorexic females displayed lower fasting and postprandial glucose levels compared to healthy females after ingesting of a 75 gram glucose load. The incidence of eating disorders in young females with type-1 diabetes is significantly common than in non-diabetic women.<sup>26</sup>

5) **Nutrient Deficiencies:**

A number of researches found symptoms of zinc deficiency, including weight loss, low appetite, dermatitis, amenorrhea and depression in anorexics.<sup>27</sup> Thiamine deficiency has been noted in 38% of a sample of anorexics using erythrocyte transketolase activation as well as riboflavin deficiency due to deficiency of conversion cofactors.<sup>28</sup>

**Treatment:**

Treatments for eating disorders depend on its types and focus on behavioral change, targeting normalizes the weight and eating habits. Depending on the severity of malnutrition and associated medical conditions, eating disorders may be treated in various settings, includes outpatient, partial hospitalization and inpatient settings.

1) **Psychotherapy:**

**Cognitive behavioral therapy (CBT):** CBT has

been found to be beneficial for the treatment of bulimia nervosa and BED. CBT aims to interrupt problematic behaviors by helping the patients to challenge their distorted thoughts that contribute to maintain abnormal eating behaviors. It helps to reduce undue thoughts about body shape and weight and changing abnormal dieting with normal eating habits. Manual based CBT is the mostly experienced treatment for bulimia nervosa and CBT is helpful in the remission of binge eating about 30-50%.<sup>29</sup>

**Family-based treatment (FBT):** FBT is considered to be most effective for adolescents and young adults with anorexia nervosa. In manual-based treatment, nutritional therapy and recovery is accessed by trained family members.<sup>30</sup>

**Specialist supportive clinical management (SSCM):** SSCM is outpatient based psychotherapy for anorexia nervosa, aims to improve symptoms by targeting weight restoration through a collaborative psychotherapeutic schedule.<sup>31</sup> This therapy consists of psychoeducation, weight monitoring and addressing targeted symptoms, driven by a clinician expertise in psychotherapy as well as experienced in the management of anorexia nervosa.

2) **Patient Education:**

All patients should be educated about the medical complications such as anorexia nervosa; bulimia nervosa as well as BED is associated with high mortality rates that involve significant cardiovascular, dermatologic, gastrointestinal, endocrine and nutritional risks.

3) **Pharmacotherapy:**

Evidence indicates that antidepressants help decreasing aberrant behaviors in bulimics, regardless of whether depression is present. TCAs, MAOIs, and SSRIs have been reported to be more helpful than placebo for bulimia nervosa. Fluoxetine is indicated by the US Food and Drug Administration for treatment of this disorder.<sup>32</sup> Bupropion and topiramate are also effective in bulimia nervosa.<sup>33</sup> It is recommended that CBT is the first line treatment option for bulimia nervosa and medication in addition to psychotherapy when CBT alone is unhelpful or severe depression is present.

**Prognosis:**

Overall rates of improvement are higher in younger anorexics but among adults anorexics, 30-50% of patients treated in the hospital with good outcome require rehospitalization within 1 year of discharge.<sup>34</sup> Limited data regarding long-term outcomes of bulimia nervosa but some studies found a recovery rate of 50% after 5- 6 years of diagnosis.<sup>35</sup>

**Conclusion:**

Since the incidence of eating disordered patients in appears to be rising, it is a time demanding issue to deliver multidisciplinary treatment for them. As eating disorders frequently involve multi-system disorders such as gastrointestinal, neurological and endocrine, early screening and assessment of patients with eating disorders is essential, especially in private practice settings.

**References:**

1. Iwajomo T, Bondy SJ, de Oliveira C, Colton P, Trottier K, Kurdyak P. Excess mortality associated with eating disorders: population-based cohort study. *Br J Psychiatry.* 2021 Sep;219(3):487-493. doi: 10.1192/bjp.2020.197.
2. Costin C. *Eating Disorder Sourcebook.* Los Angeles, CA: Lowell House; 1999:18-19.
3. Marques L, Alegria M, Becker AE, Chen CN, Fang A, Chosak A, et al. Comparative prevalence, correlates of impairment, and service utilization for eating disorders across US ethnic groups: Implications for reducing ethnic disparities in health care access for eating disorders. *Int J Eat Disord.* 2011 Jul;44(5):412-420. doi: 10.1002/eat.20787.
4. van Eeden AE, van Hoeken D, Hoek HW. Incidence, prevalence and mortality of anorexia nervosa and bulimia nervosa. *Curr Opin Psychiatry.* 2021 Nov 1;34(6):515-524. doi: 10.1097/Y-CO.0000000000000739.
5. Sullivan P. Course and outcome of anorexia nervosa and bulimia nervosa. In: Fairburn CG, Brownell KD, eds. *Eating Disorders and Obesity.* 2nd ed. New York, NY; Guilford Press; 2002:226 -232.
6. Sullivan PF. Mortality in anorexia nervosa. *Am J Psychiatry.* 1995 Jul;152(7):1073-1074. doi: 10.1176/ajp.152.7.1073. PMID: 7793446.
7. Ivancic L, Maguire S, Miskovic-Wheatley J, Harrison C, Nassar N. Prevalence and management of people with eating disorders presenting to primary care: A national study. *Aust N Z J Psychiatry.* 2021 Nov;55(11):1089-1100. doi: 10.1177/004867421998752.

8. Rorty M, Yager J, Rossotto E. Childhood sexual, physical, and psychological abuse and their relationship to comorbid psychopathology in bulimia nervosa. *Int J Eat Disord.* 1994 Dec; 16(4):317-334. doi: 10.1002/1098-108x (199412) 16:4<317::aid- eat2260160402>3.0.co; 2-j.
9. 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 Mar;157(3):393-401. doi: 10.1176/appi.ajp.157.3.393.
10. Brewerton TD. Toward a unified theory of serotonin dysregulation in eating and related disorders. *Psychoneuroendocrinology.* 1995;20(6):561- 90. doi: 10.1016/0306-4530(95)00001-5.
11. Altemus M, Glowa JR, Murphy DL. Attenuation of food-restriction-induced running by chronic fluoxetine treatment. *Psychopharmacol Bull.* 1993;29(3): 397-400.
12. Lee MA, Meltzer HY. Neuroendocrine responses to serotonergic agents in alcoholics. *Biol Psychiatry.* 1991 Nov 15;30(10):1017-1030. doi: 10.1016/0006-3223(91)90122-3.
13. Rosenthal NE, Davenport Y, Cowdry RW, Webster MH, Goodwin FK. Monoamine metabolites in cerebrospinal fluid of depressive subgroups. *Psychiatry Res.* 1980 Mar;2(1):113-119. doi: 10.1016/0165-1781(80) 90012-8.
14. Coccaro EF, Siever LJ, Klar HM, Maurer G, Cochrane K, Cooper TB, Mohs RC, Davis KL. Serotonergic studies in patients with affective and personality disorders. Correlates with suicidal and impulsive aggressive behavior. *Arch Gen Psychiatry.* 1989 Jul;46(7):587-599. doi: 10.1001/arch-psyc.1989. 01810070013002. Erratum in: *Arch Gen Psychiatry* 1990 Feb;47(2):124.
15. Bulik CM, Blake L, Austin J. Genetics of eating disorders: what the clinician needs to know. *Psychiatr Clin North Am.* 2019;42:59-73.
16. Kutz AM, Marsh AG, Gunderson CG, Maguen S, Masheb RM. Eating Disorder Screening: a Systematic Review and Meta-analysis of Diagnostic Test Characteristics of the SCOFF. *J Gen Intern Med.* 2020 Mar;35(3):885-893. doi: 10.1007/s 11606-019-05478-6.
17. First MB, Ward MN, et al. *Diagnostic and statistical manual of mental disorders: DSM-5.* 5th ed. Washington, DC: American Psychiatric Association;2013. [https://med-mu.com/wp-content/uploads/2018/08/American-Psychiatric-Association-](https://med-mu.com/wp-content/uploads/2018/08/American-Psychiatric-Association-2013-DSM-5.pdf)



- tion-Diagnostic-and-statistical-manual- of-mental-disorders-\_- DSM-5-American-Psychiatric-Association-2013.pdf [Accessed 20 th Aug 2022]
18. Choi SH. A Proposed Revision of the International Classification of Diseases, 11th Revision, Chapter 26. *Integr Cancer Ther.* 2020 Jan-Dec;19: 153473542 0908334. doi: 10.1177/1534735420 908334.
  19. Hudson JI, Hiripi E, Pope HG Jr, Kessler RC. The prevalence and correlates of eating disorders in the National Comorbidity Survey Replication. *Biol Psychiatry.* 2007 Feb 1;61(3):348-358. doi: 10.1016/j.biopsych.2006.03.040.
  20. Udo T, Grilo CM. Prevalence and correlates of DSM-5-defined eating disorders in a nationally representative sample of U.S. adults. *Biol Psychiatry.* 2018;84:345-54.
  21. Mitchell JE, Pyle RL, Eckert ED, Hatsukami D, Lentz R. Electrolyte and other physiological abnormalities in patients with bulimia. *Psychol Med.* 1983 May;13(2):273-278. doi: 10.1017/s003329 1700050881.
  22. Solomon SM, Kirby DF. The refeeding syndrome: a review. *JPEN J Parenter Enteral Nutr.* 1990 Jan-Feb;14(1):90-97. doi: 10.1177/0148607 19001400190.
  23. Kaysar N, Kronenberg J, Polliack M, Gaoni B. Severe hypophosphataemia during binge eating in anorexia nervosa. *Arch Dis Child.* 1991 Jan;66(1):138-139. doi: 10.1136/adc.66.1.138.
  24. Pomeroy C, Mitchell J. Medical complications of anorexia nervosa and bulimia nervosa. In: Fairburn CG, Brownell KD, eds. *Eating Disorders and Obesity.* 2nd ed. New York, NY: Guilford Press; 2002: 278-285.
  25. Gold PW, Gwirtsman H, Avgerinos PC, Nieman LK, Gallucci WT, Kaye W, et al. Abnormal hypothalamic-pituitary-adrenal function in anorexia nervosa. Pathophysiologic mechanisms in underweight and weight-corrected patients. *N Engl J Med.* 1986 May 22;314(21):1335-13342. doi: 10.1056/ NEJM 1986 05 22 3142102. PMID: 3010109.
  26. Gniuli D, Liverani E, Capristo E, Greco AV, Mingrone G. Blunted glucose metabolism in anorexia nervosa. *Metabolism.* 2001 Aug;50(8): 876-881. doi: 10.1053/meta.2001.24915. PMID: 11474473.
  27. Shay NF, Mangian HF. Neurobiology of zinc-influenced eating behavior. *J Nutr.* 2000 May;130(5S Suppl):1493S-9S. doi: 10.1093/jn/ 130.5.1493S.
  28. Rock CL, Vasantharajan S. Vitamin status of eating disorder patients: relationship to clinical indices and effect of treatment. *Int J Eat Disord.* 1995 Nov;18(3):257-262. doi: 10.1002/1098-108x(199511)18:3<257::aid-eat 226018 0307>3.0.co;2-q.
  29. Wilson GT, Grilo CM, Vitousek KM. Psychological treatment of eating disorders. *Am Psychol.* 2007 Apr;62(3):199-216. doi: 10.1037/0003-066 X.62.3.199.
  30. Lock J, Le Grange D, Agras WS, Moye A, Bryson SW, Jo B. Randomized clinical trial comparing family-based treatment with adolescent-focused individual therapy for adolescents with anorexia nervosa. *Arch Gen Psychiatry.* 2010 Oct;67(10):1025-1032. doi: 10.1001/archgenpsyc hiatry. 2010.128.
  31. McIntosh VV, Jordan J, Luty SE, Carter FA, McKenzie JM, Bulik CM, et al. Specialist supportive clinical management for anorexia nervosa. *Int J Eat Disord.* 2006 Dec;39(8):625-632. doi: 10.10 02/eat.20297.
  32. Hay PJ, Claudino AM. Clinical psychopharmacology of eating disorders: a research update. *Int J Neuropsychopharmacol.* 2012 Mar;15(2):209-222. doi: 10.1017/S1461145711000460.
  33. Hudson JI, McElroy SL, Ferreira-Cornwell MC, Radewonuk J, Gasior M. Efficacy of Lisdexamfetamine in Adults With Moderate to Severe Binge-Eating Disorder: A Randomized Clinical Trial. *JAMA Psychiatry.* 2017 Sep 1;74(9):903-910. doi: 10.1001/jamapsychiatry.2017.1889.
  34. Walsh BT, Kaplan AS, Attia E, Olmsted M, Parides M, Carter JC, et al. Fluoxetine after weight restoration in anorexia nervosa: a randomized controlled trial. *JAMA.* 2006 Jun 14;295(22): 2605-2612. doi: 10.1001/jama.295.22.2605.
  35. Keski-Rahkonen A, Hoek HW, Linna MS, Raevuori A, Sihvola E, Bulik CM, et al. Incidence and outcomes of bulimia nervosa: a nationwide population-based study. *Psychol Med.* 2009 May;39(5): 823-831. doi:10.1017/S00332 91708003942.