Psychiatry

A Clinical Handbook

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Chapter 6

Eating disorders

6.1 Anorexia nervosa

Definition

Anorexia nervosa (AN) is an **eating disorder** characterized by **deliberate weight loss**, an **intense fear of fatness**, **distorted body image**, and **endocrine disturbances**.

Pathophysiology/Aetiology (*Table 6.1.1*)

The aetiology of AN is generally considered to be **multifactorial**, and can be divided into predisposing, precipitating and perpetuating factors (see *Table 6.1.1*).

Table 6.1.1: Aetiological factors in AN

	Biological	Psychological	Social
Predisposing	• Genetics: Monozygotic twin studies have higher concordance rates than dizygotic twins. • Family history: First degree relatives have higher incidence of eating disorders. • Female. • Early menarche.	• Sexual abuse. • Preoccupation with slimness. • Dieting behaviours starting in adolescence. • Low self-esteem. • Premorbid anxiety or depressive disorder. • Perfectionism, obsessional/ anankastic personality.	• Western society: Pressure to diet in a society that emphasizes that being thin is beauty. • Bullying at school revolving around weight. • Stressful life events.
Precipitating	• Adolescence and puberty.	• Criticism regarding eating, body shape or weight.	• Occupational or recreational pressure to be slim, e.g. ballet dancers, models.
Perpetuating (maintaining)	• Starvation leads to neuroendocrine changes that perpetuate anorexia.	• Perfectionism, obsessional/ anankastic personality.	• Occupation. • Western society.

Epidemiology and risk factors

- AN affects ♀ more than ♂ (**10:1**).
- Estimated incidence is **0.4 per 1000 yearly in** ♂ and approximately **9 in 1000** ♀ will experience it at some point in their lives.
- The typical **age of onset** is **mid-adolescence**.

Clinical features

- The defining clinical features of AN are described in the *ICD-10* box.

ICD-10 Criteria for the diagnosis of AN: 'FEED'

- **F**ear of weight gain.
- **E**ndocrine disturbance resulting in **amenorrhoea** in females and loss of sexual interest and potency in males.
- **E**maciated (abnormally low body weight): >15% below expected weight or BMI <17.5 kg/m^2.
- **D**eliberate weight loss with ↓ food intake or ↑ exercise.
- **D**istorted body image (*Fig. 6.1.1*).

NOTE: The above features must be present for at least **3 months** and there must be the **ABSENCE** of (1) **recurrent episodes of binge eating**; (2) **preoccupation with eating/craving to eat**.

- Other features include **PP**, **SS**:
  - **P**hysical: Fatigue, hypothermia, bradycardia, arrhythmias, peripheral oedema (due to hypoalbuminaemia), headaches, lanugo hair (*Fig. 6.1.2*).
  - **P**reoccupation with food: Dieting, preparing elaborate meals for others.
  - **S**ocially isolated, **S**exuality feared.
  - **S**ymptoms of depression and obsessions.

Key facts 1: Working out BMI

Body mass index = weight (kg) ÷ [height (m)]^2

BMI <18.5 kg/m^2 = **underweight**
BMI 18.5–24.9 kg/m^2 = **normal**
BMI 25–29.9 kg/m^2 = **overweight**
BMI ≥30 kg/m^2 = **obese**

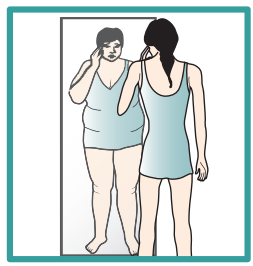

Fig. 6.1.1: Distorted body image.

Fig. 6.1.2: Lanugo hair.

OSCE tips: Anorexia nervosa vs. bulimia nervosa

Anorexia nervosa	Bulimia nervosa
• Are significantly underweight. • Are more likely to have endocrine abnormalities such as amenorrhoea. • Do not have strong cravings for food. • Do not binge eat. • May have compensatory weight loss behaviours (excluding purging).	• Are usually normal weight/overweight. • Are less likely to have endocrine abnormalities. • Have strong cravings for food. • Have recurrent episodes of binge eating. • Have compensatory weight loss behaviours.

Diagnosis and investigations

Hx

- 'Some people find body shape and weight to be very important to their identity. Do you ever find yourself feeling concerned about your weight?' **(fear of weight gain)**
- 'What would be your ideal target weight?' **(overvalued ideas about weight)**
- 'The obvious methods people use to lose weight are to eat less and exercise more. Are these things that you personally do?' **(deliberate weight loss)**
- 'When women lose significant weight, their periods have a tendency to stop. Has this happened in your case?' **(amenorrhoea)**
- Also ask *specifically* about **physical symptoms** of anorexia nervosa e.g. fatigue and headaches.

MSE

Appearance & Behaviour	Thin, weak, slow, anxious. May try to disguise emaciation with makeup. Baggy clothes. Dry skin. Lanugo hair.
Speech	May be slow, slurred, or normal.
Mood	Can be low with co-morbid depression, or euthymic.
Thought	Preoccupation with food, overvalued ideas about weight and appearance.
Perception	No hallucinations.
Cognition	Either normal or poor if physically unwell with complications.
Insight	Often poor.

NOTE: A full systems examination should be carried out to find out the degree of emaciation, to exclude differential diagnoses and to look for possible complications (see *Key facts 2*).

Ix

- **Blood tests: FBC** (anaemia, thrombocytopenia, leukopenia), **U&Es** (↑ urea and creatinine if dehydrated, ↓ potassium, phosphate, magnesium and chloride), **TFTs** (↓ T_3 and T_4), **LFTs** (↓ albumin), **lipids** (↑ cholesterol), **cortisol** (↑), **sex hormones** (↓ LH, FSH, oestrogens and progestogens), **glucose** (↓), **amylase** (pancreatitis is a complication).
- **Venous blood gas (VBG):** Metabolic alkalosis (vomiting), metabolic acidosis (laxatives).
- **DEXA scan:** To rule out osteoporosis (if suspected).
- **ECG:** Arrhythmias such as sinus bradycardia and prolonged QT are associated with AN patients.
- **Questionnaires:** e.g. eating attitudes test (EAT).

DDx

- **Bulimia nervosa.**
- **Eating disorder not otherwise specified (EDNOS):** see *Key facts 3*.
- **Depression.**
- **Obsessive–compulsive disorder.**
- **Schizophrenia:** Delusions about food.
- **Organic causes of low weight:** Diabetes, hyperthyroidism, malignancy.
- **Alcohol** or **substance misuse**.

Key facts 2: Complications of AN	
Metabolic	Hypokalaemia, hypercholesterolaemia, hypoglycaemia, impaired glucose tolerance, deranged LFTs, ↑ urea and creatinine (if dehydrated), ↓ potassium, ↓ phosphate, ↓ magnesium, ↓ albumin and ↓ chloride.
Endocrine	↑ Cortisol, ↑ growth hormone, ↓ T_3 and T_4. ↓ LH, FSH, oestrogens and progestogens leading to amenorrhoea. ↓ Testosterone in men.
Gastrointestinal	Enlarged salivary glands, pancreatitis, constipation, peptic ulcers, hepatitis.
Cardiovascular	Cardiac failure, ECG abnormalities, arrhythmias, ↓ BP, bradycardia, peripheral oedema.
Renal	Renal failure, renal stones.
Neurological	Seizures, peripheral neuropathy, autonomic dysfunction.
Haematological	Iron deficiency anaemia, thrombocytopenia, leucopenia.
Musculoskeletal	Proximal myopathy, osteoporosis.
Others	Hypothermia, dry skin, brittle nails, lanugo hair, infections, suicide.

Key facts 3: Other eating disorders	
Bulimia nervosa	Recurrent episodes of binge eating and compensatory behaviour (any one or a combination of vomiting, fasting, or excessive exercise) in order to prevent weight gain (see *Section 6.2*, Bulimia nervosa).
Binge eating disorder	Recurrent episodes of binge eating without compensatory behaviour such as vomiting, fasting, or excessive exercise.
EDNOS or atypical eating disorder	One third of patients referred for eating disorders have EDNOS (eating disorders not otherwise specified). EDNOS closely resembles anorexia nervosa, bulimia nervosa, and/or binge eating, but does not meet the precise diagnostic criteria.

Management (*includes NICE guidance*)

- The management of AN is outlined using the **bio-psychosocial model** (*Fig. 6.1.3*).
- **Risk assessment** for suicide and medical complications is absolutely vital.
- **Psychological treatments** should normally be for at least **6 months' duration**.
- The aim of treatment as an **inpatient** is for a weight gain of **0.5–1 kg/week** and as an **outpatient** of **0.5 kg/week**.
- Patients are at risk of **refeeding syndrome** which causes metabolic disturbances (e.g. ↓ phosphate) and other complications (see *Key facts 4*).
- **Hospitalization** is necessary for **medical** (severe anorexia with BMI <14 or severe electrolyte abnormalities) and **psychiatric** (suicidal ideation) reasons.
- In cases where insight is clouded, use of the **MHA** (or **Children Act**) for life-saving treatment, may be required.

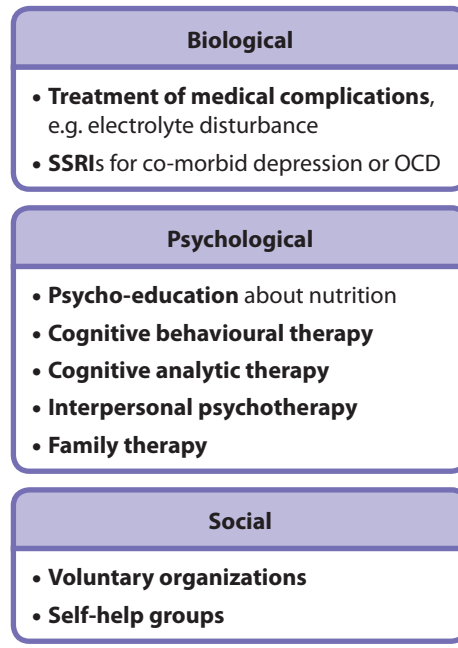

Fig. 6.1.3: Bio-psychosocial approach to AN.

Key facts 4: Refeeding syndrome

- A potentially life-threatening syndrome that results from food intake (whether parenteral or enteral) after **prolonged starvation** or **malnourishment**, due to changes in **phosphate**, **magnesium** and **potassium**.
- It occurs as a result of an **insulin surge** following increased food intake.
- Biochemical features include fluid balance abnormalities, **hypokalaemia**, **hypomagnesaemia**, **hypophosphataemia** and **abnormal glucose metabolism**.
- The phosphate depletion causes reduction in cardiac muscle activity which can lead to **cardiac failure**.
- Prevention: Measure serum electrolytes prior to feeding and **monitor refeeding bloods daily**, start at 1200 kcal/day and gradually increase every 5 days, monitor for signs such as **tachycardia** and **oedema**.
- If electrolyte levels are low, they will need to be replaced either orally or intravenously depending upon the severity of electrolyte depletion.

Self-assessment

A 16-year-old girl, accompanied by her mother, presents to her GP complaining of fatigue for 6 months. The doctor observes the patient is rather petite and is wearing an oversized, baggy dress. No signs are found on examination. During the examination the patient mentions how fat she has become. She weighs 42 kg and measures 160 cm. Her mother is concerned as her daughter has been eating only one small meal a day and exercising excessively, and seems uninterested in her friends. Her periods have also stopped.

1. Work out the girl's BMI. ***(2 marks)***
2. What is the most likely diagnosis? Name two differential diagnoses. ***(2 marks)***
3. What are the defining features of this condition? ***(4 marks)***
4. Give four complications of this condition? ***(4 marks)***
5. Outline the management strategy for this patient. ***(4 marks)***

Answers to self-assessment questions are to be found in *Appendix B*.

6.2 Bulimia nervosa

Definition

Bulimia nervosa (BN) is an **eating disorder** characterized by **repeated episodes** of **uncontrolled binge eating** followed by **compensatory weight loss behaviours** and **overvalued ideas** regarding 'ideal body shape/weight'.

Pathophysiology/Aetiology

- The aetiology of BN is very similar to AN, but whereas there is a clear genetic component in AN, the **role of genetics in BN is unclear**.
- When patients with BN binge due to **strong cravings**, they tend to feel guilty and as a result undergo **compensatory behaviours** such as **vomiting**, using **laxatives**, **exercising excessively** and **alternating with periods of starvation**. This may result in large fluctuations in weight, which reinforce the compensatory weight loss behaviour, setting up a vicious cycle (*Fig. 6.2.1*).

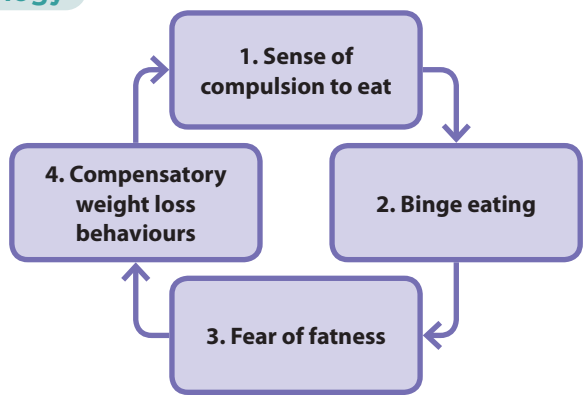

Fig. 6.2.1: The vicious cycle of BN.

Epidemiology and risk factors (*Table 6.2.1*)

- BN typically occurs in **young women**. The estimated prevalence in women aged **15–40** is **1–2%**.
- Whereas AN is thought to be more prevalent in higher socioeconomic classes, **BN has equal socioeconomic class distribution**.

Table 6.2.1: Risk factors for bulimia nervosa

	Biological	Psychological	Social
Predisposing	• Female sex • Family history of eating disorder, mood disorder, substance misuse or alcohol abuse • Early onset of puberty • Type 1 diabetes • Childhood obesity	• Physical or sexual abuse as a child • Childhood bullying • Parental obesity • Pre-morbid mental health disorder • Preoccupation with slimness • Parents with high expectations • Low self-esteem	• Living in a developed country • Profession (e.g. actors, dancers, models, athletes) • Difficulty resolving conflicts

Table 6.2.1: Risk factors for bulimia nervosa *(continued)*

	Biological	Psychological	Social
Precipitating	• Early onset of puberty/ menarche	• Perceived pressure to be thin may come from culture (e.g. Western society, media and profession) • Criticism regarding body weight or shape	• Environmental stressors • Family dieting
Perpetuating	• Co-morbid mental health problems	• Low self-esteem, perfectionism • Obsessional personality	• Environmental stressors

OSCE tips 1: BN and other co-morbid psychiatric conditions

BN commonly co-exists with the following psychiatric disorders and it is hence important to screen for them:
1. Depression
2. Anxiety
3. Deliberate self-harm
4. Substance misuse
5. Emotionally unstable (borderline) personality disorder.

Clinical features

ICD-10 Criteria for the diagnosis of BN: 'Bulimia Patients Fear Obesity'	
1. **Behaviours to prevent weight gain (compensatory)**	Compensatory weight loss behaviours include: **self-induced vomiting**, alternating periods of **starvation**, **drugs** (laxatives, diuretics, appetite suppressants, amphetamines, and thyroxine), and **excessive exercise**. **NOTE:** diabetics may omit or reduce insulin dose.
2. **Preoccupation with eating**	A **sense of compulsion** (craving) to eat which leads to bingeing. There is typically regret or shame after an episode.
3. **Fear of fatness**	Including a **self-perception** of being too fat.
4. **Overeating**	At least **two episodes per week** over a period of **3 months**.

Other features include:

- **Normal weight:** Usually the potential for weight gain from bingeing is counteracted by the weight loss/purging behaviours.
- **Depression and low self-esteem.**
- **Irregular periods.**

- **Signs of dehydration:** ↓ blood pressure, dry mucous membranes, ↑ capillary refill time, ↓ skin turgor, sunken eyes.
- **Consequences of repeated vomiting and hypokalaemia** (see *Key facts 2* and *3*).

Key facts 1: Subtypes of bulimia nervosa

There are **two** subtypes of BN:

1. **Purging type:** The patient uses self-induced vomiting and other ways of expelling food from the body, e.g. use of laxatives, diuretics and enemas.
2. **Non-purging type:** Much less common. Patients use excessive exercise or fasting after a binge. Purging-type bulimics may also exercise and fast but this is not the main form of weight control for them.

NOTE: ICD-10 does not differentiate between purging and non-purging.

OSCE tips 2: Anorexia vs. bulimia

Amenorrhoea
No friends (socially isolated)
Obvious weight loss
Restriction of food intake
Emaciated
Xerostomia (dry mouth)
Irrational fear of fatness
Abnormal hair growth (lanugo hair)

Binge eating
Use of drugs to prevent weight gain
Low potassium
Irregular periods
Mood disturbances
Irrational fear of fatness
Alternating periods of starvation

Key facts 2: Hypokalaemia (↓ K^+)

- A potentially life-threatening complication of excessive vomiting.
- Low potassium (<3.5 mmol/L) can result in muscle weakness, cardiac arrhythmias and renal damage.
- Mild hypokalaemia requires oral replacement with potassium-rich foods (e.g. bananas) and/or oral supplements (Sando-K).
- Severe hypokalaemia requires hospitalization and intravenous potassium replacement.

Diagnosis and investigations

Hx

- 'Do you ever feel that your eating is getting out of control?' **(binge eating)**
- 'After an episode of eating what you later feel is too much, do you ever make yourself sick so that you feel better?' **(compensatory self-induced vomiting)**
- 'Have you ever used medication to help control your weight?' **(self-induced purging)**
- 'Do you ever feel a strong craving to eat?' **(preoccupation with food)**
- 'Do you ever get muscle aches?', 'Do you ever have the sensation that your heart is beating abnormally fast?' **(complications of hypokalaemia)**
- Ask specifically about complications of repeated vomiting (see *Key facts 3*).
- Screen for other co-morbid psychiatric conditions (see *OSCE tips 1*).

MSE

Appearance & Behaviour	May have appearance and behaviour consistent with depression or anxiety. Likely normal weight. Parotid swelling. Russell's sign (*Fig. 6.2.2*). Sunken eyes (dehydration).
Speech	Slow or normal.
Mood	Low.
Thought	Preoccupation with body size and shape. Preoccupation with eating. Guilt.
Perception	Normal.
Cognition	Either normal or poor.
Insight	Usually has good insight.

Ix

- **Blood tests:** FBC, U&Es, amylase, lipids, glucose, TFTs, magnesium, calcium, phosphate.
- **Venous blood gas:** May show metabolic alkalosis.
- **ECG:** Arrhythmias as a consequence of hypokalaemia (ventricular arrhythmias are life threatening), classic ECG changes (prolongation of the PR interval, flattened or inverted T waves, prominent U waves after T wave).

DDx

- **Anorexia nervosa** – with bulimic symptoms.
- **EDNOS** (**E**ating **D**isorder **N**ot **O**therwise **S**pecified).
- **Kleine–Levin syndrome:** Sleep disorder in adolescent males characterized by recurrent episodes of binge eating and hypersomnia.
- **Depression.**
- **Obsessive–compulsive disorder.**
- **Organic causes of vomiting**, e.g. gastric outlet obstruction.

Key facts 3: Physical complications of repeated vomiting	
Cardiovascular	Arrhythmias, mitral valve prolapse, peripheral oedema.
Gastrointestinal	Mallory–Weiss tears, ↑ size of salivary glands especially parotid (*Fig. 6.2.2*).
Metabolic/Renal	Dehydration, hypokalaemia, renal stones, renal failure.
Dental	Permanent erosion of dental enamel secondary to vomiting of gastric acid (*Fig. 6.2.2*).
Endocrine	Amenorrhoea, irregular menses, hypoglycaemia, osteopenia.
Dermatological	Russell's sign (calluses on back of hand due to abrasion against teeth).
Pulmonary	Aspiration pneumonitis.
Neurological	Cognitive impairment, peripheral neuropathy, seizures.

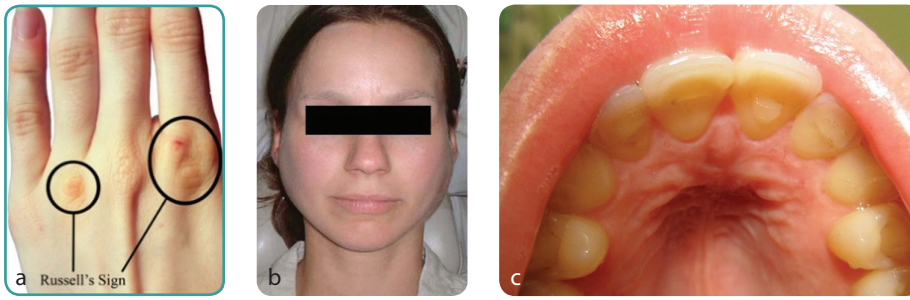

Fig. 6.2.2: Complications of repeated vomiting. (a) **Russell's sign**; (b) **Bilateral parotid swelling**; and (c) **Dental erosion**.

Management

- The management of BN is based on the **bio-psychosocial model**:
  - **Biological:** A trial of antidepressant should be offered and can ↓ frequency of binge eating/purging. **Fluoxetine** (usually at high dose, 60 mg) is the SSRI of choice. Treat medical complications of repeated vomiting, e.g. potassium replacement. Treat co-morbid conditions (see *OSCE tips 1*).
  - **Psychological:** **Psychoeducation** about nutrition, CBT for bulimia nervosa (**CBT-BN** is a specifically adapted form of CBT). **Interpersonal psychotherapy** is an alternative.
  - **Social:** **Food diary** to monitor eating/purging patterns, **techniques to avoid bingeing** (eating in company, distractions), **small**, **regular meals**, **self-help programmes**.
- From a biological perspective, **electrolytes should be monitored carefully** for any potential disturbances, and should be replaced accordingly where appropriate.
- **Risk assessment** for suicide. Co-morbid depression and substance misuse are common.
- **Inpatient treatment** is required for cases of **suicide risk** and **severe electrolyte imbalances**.
- The **Mental Health Act** is not usually required, as BN patients have **good insight** and are motivated to change.
- Approximately **50%** of BN patients make a **complete recovery** in comparison with AN where roughly 20% make a full recovery.

Self-assessment

A 25-year-old female vegetarian presents to you very distressed. She describes a 3-year history of strong cravings for food, resulting in sessions of binge eating. To make herself feel better she states that she deliberately vomits five times a day and compulsively exercises for 2 hours a day.

1. Which eating disorder is the most likely diagnosis? Name two differentials. ***(3 marks)***
2. What are the four diagnostic features of this condition based on ICD-10? ***(4 marks)***
3. What is the most important complication of repeated vomiting? How would you test for this in a laboratory? ***(2 marks)***
4. Give two further complications for repeated episodes of vomiting. ***(2 marks)***
5. Outline the management of this condition in the community. ***(3 marks)***

Answers to self-assessment questions are to be found in *Appendix B*.