

Eating Disorders

F50-F59 *Behavioural syndromes associated with physiological disturbances and physical factors*

F50.0 Anorexia nervosa (AN)

History

- described, but not named, by Louis Victor Marce (1860)
- 'de l'anorexie hysterique' – Charles Lasegue (1873)
- William Gull (1874)

The Minnesota experiments

- Keys *et al* (1950)
- 36 healthy volunteers during WWII were starved for 6 months, followed by 3 months of rehabilitation and 9 months further monitoring
- the previously healthy men started to develop anorexic symptoms:
 - obsessions with food
 - hiding food and hoarding
 - binge eating
 - mood swings
 - marked social and sexual changes, with the men becoming increasingly withdrawn and isolated

Epidemiology

- *incidence* ranges from 0.37 to 4.06 per 100,000 per year (USA and Scottish figures respectively) :
 - 14.6 per 100,000 per year for females
 - 1.8 per 100,000 per year for males
- *prevalence* :
 - 269 per 100,000 females
 - 22.5 per 100,000 males
- F:M = 10:1
- reported incidence is increasing in recent years
 - some increase is suggested for 15-24 age group (Lucas *et al.* 1991)
 - the *cult of thinness* in Westernized societies is the likeliest cause of changes in the incidence, the form, and the psychological content of eating disorders as they have evolved during the last decades of the 20th century
- surveys have suggested *prevalence* at around 1 % among schoolgirls and university students
- more young women have amenorrhoea and weight loss less than that required for a diagnosis of anorexia
- amongst anorexic patients seen in clinical practice, only 5-10 % are male
- *onset*: usually between the ages of 16 and 17, and is rare after 30

- 90 % of females have onset within 5 years of menarche
- more common in:
 - upper social classes (I and II)
 - occupational groups concerned with weight, e.g. ballet dancers, gymnasts
- adverse life events more evident in 'late onset' (> 25 years) AN
- *co-morbidity* – 84 % of AN patients have lifetime diagnosis of another psychiatric disorder
 - major depression in 68 % of patients
- rarer in non-Western countries

DCR-10

- A. There is weight loss or, in children, a lack of weight gain, leading to a body weight of at least 15 % below the normal or expected weight for age and height
- B. The weight loss is self-induced by avoidance of 'fattening foods'
- C. There is self-perception of being too fat, with an intrusive fear of fatness, which leads to a self-imposed low weight threshold
- D. A widespread endocrine disorder involving the hypothalamic-pituitary-gonadal axis is manifest in women as amenorrhoea, and in men as a loss of sexual interest and potency
- E. The disorder does not meet criteria A and B for bulimia nervosa

- in ICD-10, the BMI must be 17.5 or less, whereas DSM-IV only requires a body weight of 85% or less than expected
- In DSM-IV, specify type:
 1. **restricting type**: during the current episode, the person has not regularly engaged in binge-eating or purging behaviour
 2. **binge-eating/ purging type**: the person has regularly engaged in binge-eating or purging behaviour

Physical complications

1. *Neurological*:

- 'pseudotrophy' on brain imaging
- increase in ventricular-brain ratio secondary to starvation
- EEG abnormalities
- seizures
- peripheral neuropathy
- autonomic dysfunction

2. *Cardiovascular*:

- peripheral oedema
- congestive cardiac failure
- bradycardia
- hypotension
- decreased heart size
- QT prolongation
- mitral valve prolapse

3. *Metabolic:*

- dehydration
- hypoglycaemia (due to bingeing and purging) and impaired glucose tolerance (due to starvation)
- deranged LFTs
- hypercholesterolaemia
- hypokalaemia
- hypercarotaemia
- hypoproteinaemia
- ↑ plasma amylase
- ↓ Mg²⁺
- ↓ Ca²⁺
- ↓ phosphate
- raised beta-hydroxybutyrate
- high free fatty acids

4. *Endocrine:*

- ↑ GH
- ↑ cortisol (positive DST)
- ↓ gonadotrophin
- ↓ oestrogens
- ↓ testosterone
- ↓ T₃ (sick euthyroid syndrome)
- amenorrhoea / loss of libido

5. *Haematological:*

- normochromic, normocytic, or iron-deficient anaemia
- leucopenia, with a relative lymphocytosis
- hypocellular marrow
- thrombocytopenia
- low ESR
- reduced serum complement level

6. *Gastrointestinal:*

- swollen salivary glands
- dental caries
- erosion of enamel (vomiting)
- delayed gastric emptying
- acute gastric dilations (bulimic episodes, vigorous refeeding, constipation)
- acute pancreatitis
- degeneration of myenteric plexus of bowel, with consequent constipation

7. *Renal:*

- partial diabetes insipidus
- pre/ acute/ chronic renal failure
- renal calculi
- hypokalaemic nephropathy
- proteinuria
- reduced GFR

8. *Musculoskeletal:*

- osteoporosis – bone mineral density correlates with the length of amenorrhoea
- stress fractures
- stunted growth
- muscle cramps

9. *Other:*

- hypothermia
- bacterial infections (TB, staph)
- lanugo (hair on trunk)
- brittle hair and nails
- normal secondary sexual hair pattern unaffected
- low birthweight children
- increased miscarriage and congenital malformation
- perinatal mortality if patients conceive before complete restoration of weight
- cystic change in ovaries

Aetiology

1. **Biological**

- a) ? *hypothalamic dysfunction* :
 - i) the condition can occur with structural lesions of the hypothalamus
 - ii) some studies (Gordon *et al* 1997) have reported unilateral (i.e. unlikely to be due to starvation) temporal lobe hypoperfusion
- b) *disordered 5-HT system*
 - i) anorexia is possibly due to increased 5-HT activity
 - ii) 5-HT abnormalities persist even after weight restoration (Kaye *et al.* 1991)
- c) *cholecystokinin (CCK)* may also cause dysregulation of satiety
- d) *genetically:*
 - i) twin studies : MZ : DZ = 56 % : 5 %
 - ii) among female siblings of patients with anorexia, 6-10 % also have the disorder, compared to 1-2 % in the general population
 - iii) association with unipolar depression

2. **Psychosocial**

- a) Failure of individuation in adolescence and failure to develop autonomy – body shape misperception and body shape disparagement (Bruch, 1978)
- b) Regression into pre-puberty due to the threat of developing sexuality (Crips)
- c) The ill child is needed for family homeostasis - the sick child plays an important role in the family's pattern of conflict avoidance, and this role is an important source of reinforcement for his/her symptoms (Minuchin, Selvini-Palazolli)
 - i) high rates of psychiatric illness – particularly AN, depression, alcoholism, psychosexual disturbances, and OCD in mothers (Halmi *et al.* 1991)
- d) morbid fear of fatness

- e) Cult of thinness
- f) Woman's changed role, and role conflict
- 3. **Personality**
 - a) AN associated with:
 - i) premorbid perfectionism
 - ii) negative self-evaluation
- 4. **Psychological**
 - a) reduced vigilance and attention span
 - b) impairment of visuospatial processing
 - c) impaired associate learning
 - d) most return to normal limits with weight gain

Treatment

1. *Starting treatment*
 - a) good relationship with patient
 - b) educating patient and family
 - c) admission to hospital if :
 - i) weight is less than 65 % of standard weight/ BMI below 13
 - ii) weight loss is rapid
 - iii) there is severe depression or suicidal ideation
 - iv) out-patient care has failed
2. *Restoring weight*
 - a) target is a compromise between a healthy weight and patient's concept of ideal weight
 - b) a reasonable target is to aim for ½ 1 kg per week
 - c) beware rapid weight gain:
 - i) patient becomes fearful of weight gain
 - ii) hypophosphataemia and the risk of cardiac failure
 - d) beware of patient 'eating their way out of hospital' with subsequent increases in guilt and feelings of failure
3. *Psychotherapy*
 - a) family therapy has been used with some success but family participation is needed
 - i) can improve 1-year outcomes
 - ii) at five years, patient who had received family therapy were doing better
 - b) cognitive therapy (the only controlled trial has shown no clear difference between cognitive and behavioural therapy)
 - c) self-help groups

Course and prognosis

1. The Maudsely Study (Ratnasuriya *et al* 1991) - 20 year follow up
 - a) 63 % had progressed well
 - b) 33 % still psychosocially impaired
 - c) 37 % were poorly or had died
 - d) crude mortality rate up to 20 years was 15 %
2. **Predictors of poor outcome:**
 - a) late age of onset (late teens or older)
 - b) already continuously ill for several years at presentation (> 6 years)

- c) disturbed relationship between the patient and the other members of the family
- d) poor adjustment at school, and other personality problems before the age of onset
- e) premorbid obesity
- f) *very* low body weight on admission
- g) bulimic behaviour
- h) male gender

F50.2 Bulimia nervosa (BN)

History

- Russel G F M (1979) 'Bulimia Nervosa: an ominous variant of anorexia nervosa'. Psychological Medicine 9:429.

Epidemiology

- *incidence* varies between 3.9 and 13.5 per 100,000 per annum
- *prevalence* is between 1-2 % between women aged between 16 and 40 years
- BN affects 4 % of females adolescents
- *onset*: later than for AN – late adolescence or early teens
- more common in:
 - women; uncommon in men
 - developed countries
- 80 % of US students have reported binge eating
- more common than AN
- approx. 50% of BN cases have prior history of AN

DCR-10

- A. There are recurrent episodes of overeating (at least twice a week over a period of 3 months) in which large amounts of food are consumed in short periods of time
 - B. There is persistent preoccupation with eating, and a strong desire or a sense of compulsion to eat
 - C. The patient attempts to counteract the 'fattening' effects of food by one or more of the following:
 - self-induced vomiting
 - self-induced purging
 - alternating periods of starvation
 - use of drugs such as appetite suppressants, thyroid preparations or diuretics
 - D. There is self-perception of being too fat, with an intrusive dread of fatness (usually leading to underweight)
- In DSM-IV, two subtypes :
 1. **purging type**
 2. **non- purging type**

Physical complications

- hypokalaemia from repeated vomiting / laxative abuse (50% of patients have electrolyte disturbances)
 - dependent on weight – K^+ is lower if weight is lower
 - leads to:
 - cardiac arrhythmia
 - muscular paralysis
 - renal impairment
 - urinary infection
 - epileptic seizures

- hypocalcaemia and consequent tetany
- due to repeated vomiting:
 - swollen salivary glands and parotid gland
 - dental enamel becomes eroded by gastric acid
 - callouses and scarring on hands from teeth (repeated self-induced vomiting) – *Russell's sign*
 - oesophageal tears
 - conjunctival haemorrhages
- injury to myenteric plexuses of large bowel
- menstruation is absent or irregular in about 50% of cases
 - associated with low oestradiol and progesterone levels

Psychiatric features

- depressive symptoms are more common than in anorexia nervosa
- some patients have multiple dyscontrol behaviours indicative of marked personality disturbance
- these patients have been termed multi-impulsive bulimia nervosa by Lacey (1993)
 - marked affective dysregulation
 - mood swings of depression, anger and elation
 - older when they seek help
 - more likely to have been sexually abused
- Lacey's criteria require at least 3 of:
 - drinking at least 36 units of alcohol per week
 - taking heroin, LSD or amphetamines, or purchasing street tranquillisers on at least four occasions in the last year
 - stealing at least 10 times in the previous year
 - taking at least one overdose in the previous year; and severe regular self-cutting or self-burning

Aetiology

1. **Biological**
 - a) *Genetic* :
 - i) MZ : DZ = 22 % : 9 %
 - b) *Familial* :
 - i) high rates of psychiatric disturbance, especially depression
 - c) *Disordered 5-HT system* :
 - i) may be due to decreased 5-HT activity
 - a) SSRIs are effective treatments
 - b) pharmacological activation of 5-HT leads to inhibition of food consumption
 - d) *Dopamine abnormalities* :
 - i) reduced CSF HVA
 - e) *Cholecystokinin (CCK)* also implicated in dysregulation of appetite
2. **Psychosocial**
 - a) high rates of depression/ dysphoria, alcohol abuse, personality disorder
 - b) high incidence of physical abuse among sufferers
 - c) childhood sexual abuse is seen in multi-impulsive bulimia nervosa

Treatment

- similar in principle to that of anorexia nervosa
- 1. *Cognitive behaviour therapy* has been extensively studied
 - a) aims to normalize eating habits and modify the concerns about excessive weight
 - b) 2/3 of patients treated with CBT achieve substantial and lasting change
- 2. *Interpersonal therapy*
 - a) some evidence that this is equally effective
- 3. *Guided self help*
 - a) patients are given a comprehensive self-help manual and have a limited number of sessions with a therapist
 - b) modest benefits reported
- 4. *Pharmacological :*
 - a) SSRIs (FLUOXETINE)
 - i) effective in short term, independent of mood status
 - ii) long term maintenance characterized by high relapse
 - iii) higher doses (60mg) are more effective
 - b) Imipramine
 - i) efficacy established in the short term

Course and prognosis

1. overall better outcome than AN, but high rates of relapse and psychosocial impairment
2. **Predictors of poor outcome :**
 - a) premorbid low self-esteem
3. % of patients still meeting diagnostic criteria :
 - a) 2 years = 35.8
 - b) 6 years = 21.4

Anorexia vs. Bulimia

- many patients with AN go on to develop BN

	Anorexia Nervosa	Bulimia Nervosa
Onset	earlier	later
Depressive symptoms	less common	more common
5-HT	possibly elevated	possibly reduced
Outcome	poor	better than AN
MZ:DZ	10:1	2:1
Prevalence	0.25%	1-2%
Personal and family history of obesity	less common	common
Family history of affective disorder	less common	common
Family history of substance misuse	less common	common

Obesity

- defined as body weight in excess of 120 % of average for age, sex, and height

Epidemiology

- most common nutritional disorder in the UK
 - 50 % of middle-aged, social class IV and V females are obese
- more common in :
 - lower social class
 - middle-aged
 - females
- associated with increased risk of :
 - MI
 - CVA
 - hypertension
 - diabetes
 - arthritis
 - accidents
 - breast cancer
 - ? uterine cancer

Aetiology

1. *Metabolic :*
 - a) often have apparently normal food intake
 - b) physically less active
 - c) possibly reduced diet-induced heat production when overfeeding, due to reduced responsiveness of brown adipose tissue (? Due to abnormalities of infant feeding)
2. *Perceptual abnormalities :*
 - a) poor at judging how much they have eaten – underestimated by 47 % (Lichtman *et al.* 1992)
 - b) tend to eat even if they have recently eaten
 - c) eating is more related to external stimuli (e.g. smell, sight, time of day) than internal stimuli (e.g. fasting gastric motility)
 - d) after weight loss they still tend to see themselves as fat
3. *Emotional factors :*
 - a) no increase in measurable neuroticism
 - b) may respond to stress with comfort eating or bingeing
4. *Learned behaviour :*
 - a) food given by parents at times of stress
 - b) guilt evinced if food not taken
5. *Organic :*
 - a) hypothyroidism
 - b) hypopituitarism
 - c) hypoglycaemic attacks
 - d) hypothalamic damage (? Ventromedial nucleus)
6. *Family studies :*
 - a) tends to be familial, but possibly not genetic

- b) family and twin studies may support a greater environmental influence on body fat

Management

1. *Calorie-controlled diet :*
 - a) aim for weight loss of 1-2 kg per week
 - b) most studies have a high relapse rate
 - c) dieting may result in irritability and depression, possibly due to loss of 'somatic defences'
2. *Psychotherapy :*
 - a) group psychotherapy may be helpful
 - b) marital therapy often necessary to alter family patterns
3. *Behaviour therapy :*
 - a) self-monitoring
 - b) regulation of environmental cues for eating
 - c) self-reinforcement
4. *Drug therapy :*
 - a) PHENTERMINE and FENFLURAMINE are sometimes useful
5. *Surgical interventions :*
 - a) limited to those > 100 % overweight
 - b) dental splinting, truncal vagotomy, gastric bypass or partition and intestinal bypass
 - c) may be effective in morbid obesity
 - d) 25 % have postoperative depression