



Eating Disorders

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Anorexia Nervosa

“There were times I felt fat. I had a distorted image of myself”

Ana Carolina Reston
(1985-2006)



Learning Objectives

- Diagnostic criteria
- Epidemiology
- Etiology
- Differential diagnosis
- Medical consequences
- Treatment approach
- Psychotropic medications



Learning Objectives

- Identify 3 major types of eating disorders
- List the diagnostic criteria for each
- Determine the healthy weight & BMI
- Discuss the bio-psychosocial etiology of eating disorders
- Identify the medical consequences
- Discuss the treatment approaches
- Understand the appropriate use of psychotropic medications



Anorexia Nervosa: History

- “Nervous loss of appetite” a misnomer
- Refusal to maintain adequate body weight
- Followers of St. Jerome starving ca. 900 AD
- Saint Catherine of Sienna, Italy had anorexia
- Richard Morton: “*A Nervous Consumption*” in his 1689 textbook, *A Treatise of Consumption*
- Sir Wm Gull in 1874 paper, coined the term “*Anorexia Nervosa*”
- Schilder: “*Body Image*”

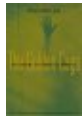


Anorexia Nervosa: History

- Hilde Bruch, M.D.



- *Eating Disorders: Obesity, Anorexia Nervosa & the Person Within (1973)*



- *The Golden Cage: The Enigma of Anorexia Nervosa (1978)*

- AN: relentless pursuit of excessive thinness; self-starvation=struggle for autonomy, competence and self-respect
 - Body image disturbance
 - Interoceptive disturbance: misinterpretation of internal sensation like hunger
 - Feelings of ineffectiveness & loss of control



Eating Disorders

- Anorexia Nervosa (307.1)
 - Restricting
 - Purging
- Bulimia Nervosa (307.51)
 - Purging
 - Non-purging
- Binge Eating Disorder (307.50)



Anorexia Nervosa: Diagnosis

- Refusal to maintain adequate weight: less than 85% of ideal body weight
- Intense fear of weight gain
- Body-image distortion: “feels fat” even when obviously under weight
- Amenorrhea for 3 cycles
- 2 types: restricting, purging



Ideal Body Weight

- Women: 100 Lbs for 5 ft height; add 5 Lbs for each additional inch
- Men: 106 Lbs for 5 ft height; add 6 Lbs for each additional inch
- BMI (Body Mass Index) = wt/ht^2 in Kg/m^2
 - Anorexia (85% of IBW) < 17.5
 - Normal: 18.5 – 24.9
 - Overweight: 25.0 – 29.9
 - Obese: > 30.0



- Conversion formula: $\text{wt (Lbs)}/\text{ht}^2 \text{ (inches)} \times 703$

Bulimia Nervosa: Diagnosis

- **Binge eating:** > twice a week for 3 months
 - Eating large amount & sense of lack of control over eating
- **Purging:** vomiting, laxatives, diuretics, excessive exercise to prevent weight gain
- **Preoccupation:** with body size, shape
- **Self-evaluation:** unduly influenced by body shape / weight
- **2 types:** purging, non-purging



Binge Eating Disorder: Diagnosis

- Binge eating with lack of control
- At least twice weekly for 6 months
- Marked distress regarding binging
- No purging
- Other symptoms:
 - Eating much more rapidly than normal
 - Eating until feeling uncomfortably full
 - Eating large amounts when not hungry
 - Eating alone because of feeling embarrassed about eating
 - Feeling disgusted, depressed or guilty after eating



Anorexia Nervosa: Epidemiology

- Onset: bimodal (age of puberty 12-15 and late teen - early 20's)
- 0.5% of adolescent females in US
- F : M = 4.2 : 1
- No racial differences
- Worldwide phenomenon (not just Western)



Bulimia Nervosa: Epidemiology

- Onset: late teens – mid-20's
- 1 – 5% of adolescent females in US
- F : M = 11.4 : 1



Eating Disorders in Men

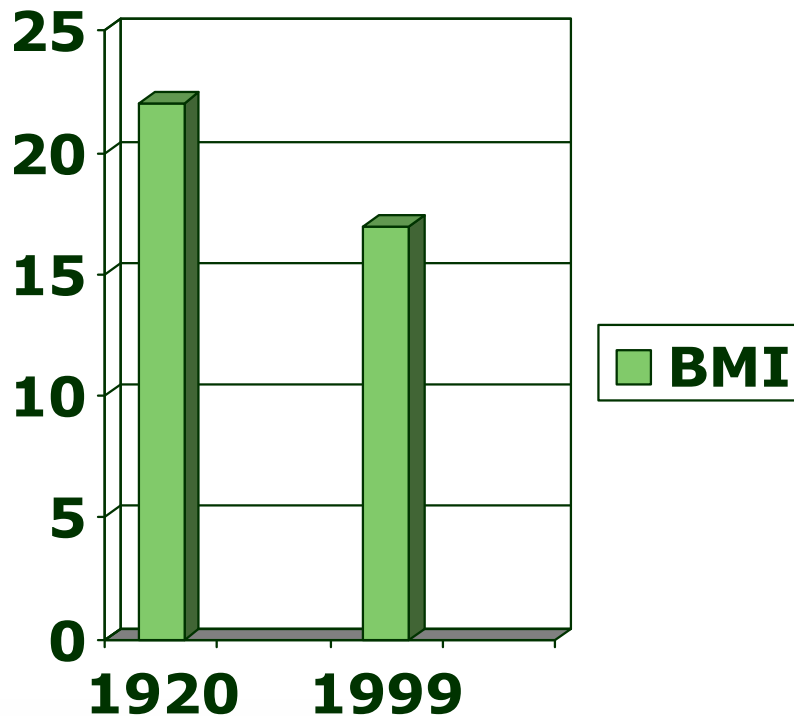
- Rare in men (F : M = 9 : 1)
- Higher prevalence of homosexuality among men with eating disorders
- Less co-morbid depression / anxiety than women
- Higher prevalence of alcohol dependence
- Lower rate of sexual abuse than women
- Body image distortion is different in men



Body Image Distortion



Societal Factors



- “Missing America” a study by Johns Hopkins School of Public Health
- BMI (body mass index) of Miss Americas from 1920 – 1999. (Normal= 19 – 25)
- “At this rate, the BMI of Miss America could reach zero in about 320 years...”
- Times Magazine, April 3, 2000 issue



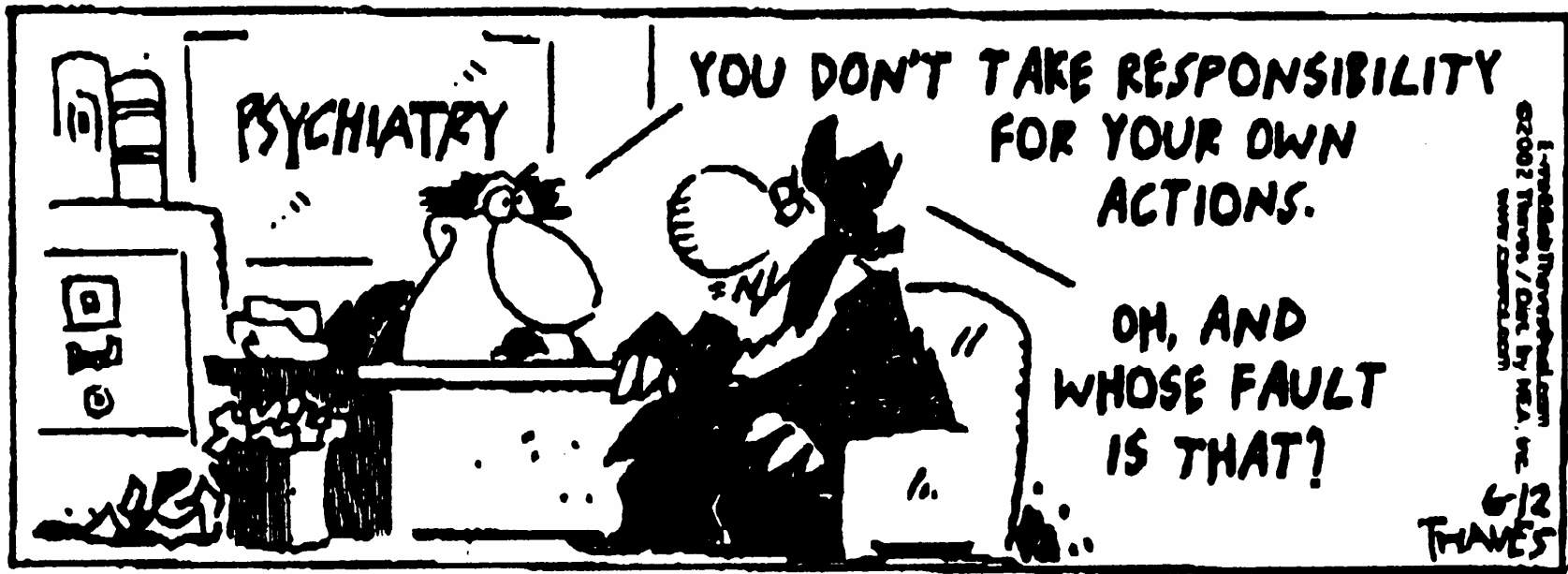
Anorexia Nervosa & Bulimia: Etiology

- Genetics
 - Twin of a woman: odd ratio 10.7 for AN, 9.0 for BN
 - Human Genome Project: no specific gene defect found yet; AGRP (Agouri-related protein): a chemical messenger to stimulate appetite, in chromosome 16, was defective in 11%
- Brain Biochemistry / Neurotransmitters
 - Decreased 5-HIAA (serotonin metabolite) & MHPG (NE metabolite) in CSF of women with AN & BN
 - Tryptophan (precursor of serotonin) - free diet caused lowering of mood, sense of loss of control in eating among bulimics: decrease in serotonin activity may trigger cognitive and mood disturbances associated with BN



Anorexia Nervosa & Bulimia: Etiology

FRANK & ERNEST® by Bob Thaves



Anorexia Nervosa & Bulimia: Etiology

- Family Dynamics

- Mothers are often blamed: seen as dominating & powerful
- Fathers are noted to be distant, withholding affection especially as the girl matures
- Chaotic family dynamics: unresolved conflicts and rigid coping skills and communication forms: Dinner table and food become the battle ground for parental conflict
- Lack of healthy parental model of effective use of assertive methods of expressing anger (one tend to be aggressive while the other passive or passive-aggressive)
- Parental pressure to lose weight at young age
- Childhood sexual abuse & incest



Anorexia Nervosa & Bulimia: Etiology

- Personal development issues
 - Psychoanalytic theory (not helpful):
 - AN is a defense against development into a mature and sexual women.
 - BN: bingeing is oral equivalent of impregnation desire, and purging the repudiation of this unwanted conflict
 - Psychological development (Dr. Hilde Bruch):
 - AN: Powerlessness & Perfectionism
 - BN: Deprivation & Dependency (“Emptiness inside”)
- Societal Factors



“Biggest disease
is feeling
unwanted.
People need to
be loved.
Without it, they
die”



Princess



Anorexia Nervosa: differential diagnosis

- Affective disorder: depression, bipolar
- Personality disorder:
- Schizophrenia (paranoid delusion)
- Anxiety disorders, OCD (food rituals)
- Stimulant abuse (cocaine, methamphetamine, caffeine, Ritalin)
- Medical disorders (hyperthyroidism, neoplasm, diabetes, mal-absorption, chronic infection incl. AIDS, TB)



Bulimia Nervosa: differential diagnosis

- Affective disorder: depression, bipolar
- Personality disorder
- Schizophrenia
- Anxiety disorders, OCD
- Medical disorders (severe GERD, PUD, delayed gastric emptying, diabetic gastroparesis, malabsorption, GI tumor, brain tumor, severe vertigo, migraine headache, medications including cancer chemotherapy, hypothyroidism, acute febrile illness and chronic infections)



Anorexia Nervosa: medical consequences

- Malnutrition
- Low BP, HR, cardiac output, syncope
- Endocrine changes (amenorrhea, low E₂, FSH, LH = return to pre-pubertal state, lanugo hair, osteoporosis)
- Anemia, leukopenia, thrombocytopenia
- Delayed gastric emptying (“shrinking” of stomach)
- Dehydration, constipation
- Fatty liver changes (elevated liver enzymes)



Bulimia Nervosa: medial consequences

- Parotid gland hypertrophy (“chipmunk face”)
- Dental enamel loss
- Esophagitis, gastritis, Mallory-Weiss tear, esophageal rupture
- Severe hypokalemia, cardiac arrhythmia
- Metabolic alkalosis (due to vomiting & laxative abuse)
- Aspiration pneumonia
- Cardiac failure (with use of ipecac syrup)



Morbid Obesity: medical consequences

- Hypertension
- Diabetes mellitus
- Leg edema, possibly CHF
- Osteoarthritis (knees, lumbar spines), ataxia & falls
- Hyperlipidemia, with increased risk of ASHD, CVA
- Obstructive sleep apnea
 - Daytime hypersomnolence "Pickwickian Syndrome"
- Hypoventilation, COPD



Multifactorial Treatment Approach: Anorexia Nervosa & Bulimia Nervosa

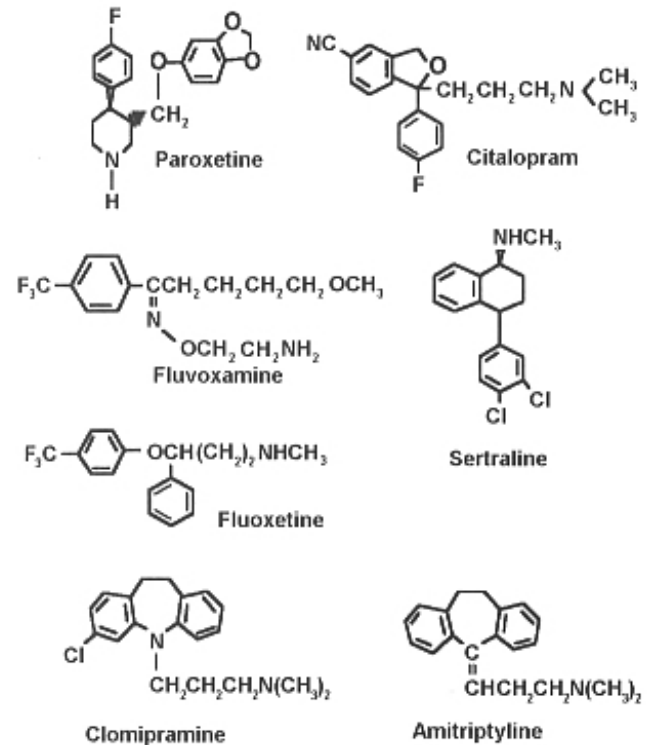
- **Nutritional support** (malnutrition, dehydration)
 - Caloric needs: 15 Kcal/Lb of IBW (for 5'5" women, IBW is $100 + 5 \times 5 = 125$ Lb, and $15 \times 125 = 1875$ Kcal)
 - Nutritional knowledge is frequently poor & distorted
- **Medical issues**
 - Hypokalemia, delayed gastric emptying, nausea, purging, esophagitis, gastritis, constipation, laxative abuse
- **Psychological issues**
 - Depression, anxiety, denial, distorted body image, low self-esteem, self-abusive behavior
 - Cognitive behavioral therapy & Psychotropic medications
 - Family therapy



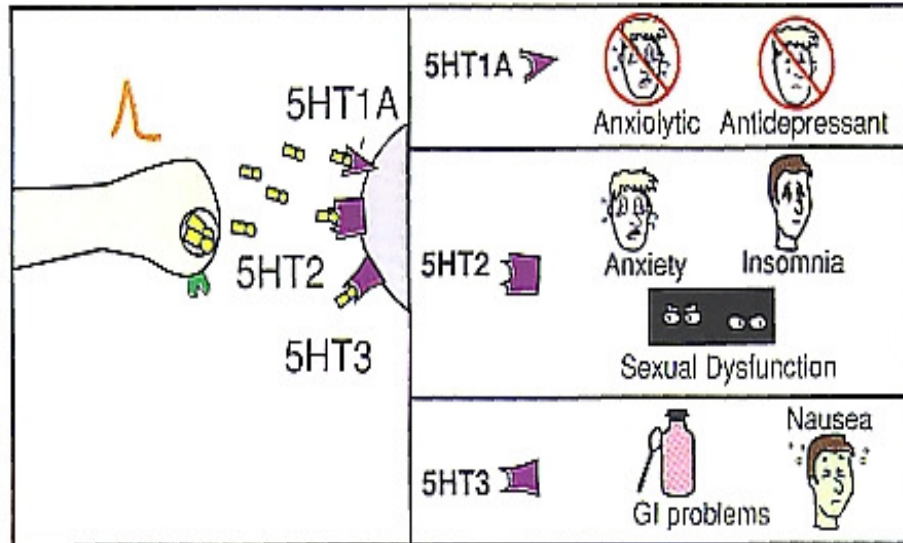
Psychotropics: SSRI

- Fluoxetine (Prozac)
- Sertraline (Zoloft)
- Paroxetine (Paxil)
- Citalopram (Celexa)
- Escitalopram (Lexapro)

- All block reuptake of 5-HT
- Fewer side effects compared to TCA, MAOI
- Be careful when treating children



Psychotropics: SSRI



Fluoxetine Bulimia Nervosa Collaborative Study Group

- 387 patients with bulimia nervosa were divided to 3 groups (placebo, 20mg or 60mg Fluoxetine)
- Fluoxetine was effective in reducing the episodes of binge eating & purging.
- High dose (60mg) group showed better response than low dose (20mg) group.

Archive of General Psychiatry 1992



Psychotropics: others

- Nefazodone (Serzone)
- Venlafaxine (Effexor)
- Duloxetine (Cymbalta)
- Bupropion (Wellbutrin, Wellbutrin SR)
- Mirtazapine (Remeron)
- Olanzapine (Zyprexa)
- Topramate (Topamax)



Nefazodone (Serzone)

- Blocks post-synaptic 5-HT₂ receptor which causes potentiation at 5-HT₁ receptor (to improve depression & anxiety)
- No clinical trials for eating disorder
- Warning: rare risk of hepatic failure
- Not popular (no longer listed on PDR)



Venlafaxine (Effexor)

- Dual action antidepressant (5-HT & NE)
 - Inhibits reuptake of serotonin & norepinephrine at presynaptic transporter sites, increasing 5-HT & NE at post-synaptic receptors
- Effexor XR (Extended Release Capsule)
- Elimination $T_{1/2}$: 5hr (V), 11hr (ODV)
- A small study of patients with AN:
 - improved BMI from 15.7 to 18.3 in 6 mo.



Duloxetine (Cymbalta)

- Dual action antidepressant (5-HT & NE)
- May help reduce painful physical as well as emotional symptoms of depression
- Safer than TCAs (like Amitriptyline) but with similar analgesic effects?
- Watch for hepatotoxicity



Bupropion (Wellbutrin)

- Antidepressant with actions on NE & D
- 1988 multicenter study for bulimia nervosa
 - Bupropion was effective in reducing bingeing & purging behavior
 - Increased risk of seizure* in bulimic patients (seizure rate 5.8% vs 0.4% non-bulimics on Tx)
- Bupropion is relatively contraindicated in patients with bulimia or anorexia*



Mirtazapine (Remeron)

- Antidepressant
 - increases serotonin by blocking post-synaptic 5-HT₂ receptors
- Anxiolytic effect (like Nefazodone)
- No headache / GI side effects (binds 5-HT₃)
- Antihistamine effect (sedation, weight gain)
- T_{1/2} 20-40 hr



Olanzapine (Zyprexa)

- Atypical antipsychotic
- Binds to post-synaptic 5-HT₂ & D₂
- Side effects: weight gain, possibly diabetes



Topiramate (Topamax)

- Anticonvulsant
- Modulates GABA_A (gamma-amino-butyric acid) receptor
- No side effect of increased appetite (often causes weight loss)
- Particularly useful for bulimia nervosa & binge eating disorder



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