I. Introduction

A. Eating disorders are common, but hard to identify (Slide 2)

1. Prevalence of all eating disorders are ↑; ~5% of US population \(^1,2\)
   a. 3% US ♀ & ~ 1% ♂ have an eating disorder (anorexia or bulimia nervosa)
   b. Binge eating occurs equally in ♂ & ♀ ~ 5% \(^3\)

2. 80% of US ♀ are dissatisfied w/ body – 50% of these are of normal weight \(^4\)

3. 45% ♀ & 25% ♂ & are on a diet on any given day in US

4. 35% of “normal dieters” in US → pathological dieting; ~ 25% of those → to EDs \(^5\) (Slide 3)

5. In the EAT-II longitudinal study of ~ 5,000 Junior/Senior HS students \(^6\)
   a. ~ 65% of teenage ♀; 35% of teenage ♂ used unhealthy weight control measures (e.g. skip meals/food substitutes/fast/smoke)
   b. ~20% of teenage ♀; 10% of teenage ♂ used very unhealthy weight control measures (e.g. vomit/diet pills/laxatives/diuretics)

6. Shame/secretiveness prevents identification \(^7,8\)

B. Alcohol use disorders (AUDs) are also common (Slide 4)

1. U.S. adults:
   a. ~90% lifetime alcohol use \(^9\)
   b. ~50% used alcohol in past year
   c. 60% of HS seniors have already been drunk

2. “Hazardous drinkers”→ (>5 drinks/day) ~ 25% past year \(^10,11\)
   a. Not abuse or dependence
   b. ♂ ≥ 5 drinks/day or ≥ 15 drinks/wk
   c. ♀ ≥ 4 drinks/day & ≥ 8 drinks/wk
   d. Risk for alcohol-related problems (↑blood pressure, cancer risk)
3. Alcohol abuse prevalence
   a. 18% lifetime: ♂ > ♀ (~2:1)
   b. 5% 12-month prevalence
   c. <10% will progress to dependence
4. Alcohol dependence prevalence
   a. 13% lifetime: ♂ > ♀ (~2:1)
   b. 4% 12-month prevalence
   c. 50% will develop clinically relevant symptoms of withdrawal (e.g. hand tremor/hallucinations/nausea/vomiting/seizures/insomnia)
   d. Only ¼ seek treatment

C. Mortality & Morbidity of EDs & AUDs (Slide 5)
   1. EDs - ↑ mortality rate of any psychiatric ds
      a. 18X ↑ in mortality rate, ↓ lifespan by a decade
      b. 12% will die (>½ from suicide)
   2. ED – all bodily systems begin to shut down (osteoporosis, amenorrhea, muscle wasting)
   3. AUDs - ↑ 3-4X early death
      a. Health related (e.g. stroke, cancer, heart ds), ↑ risk for ♀ w/ mild-moderate drinking
      b. Accidents
      c. Suicide

*This lecture reviews (Slide 6)
   1. Definitions of EDs & AUDs
   2. Relationships between EDs & AUDs
   3. Screening & identification of EDs & AUDs
   4. Assessment & management of EDs & AUDs

II. Definitions of EDs & AUDs
   A. What are EDs? – Youtube video from “eating disorder awareness week” (Slide 7)
1. DSM-IV definition of AN (WAFE mnemonic) (Slide 8)
   a. **Weight** – Refusal to maintain weight at 85% of expected
   b. **Amenorrhea** (only in ♀ of child-bearing age)
   c. **Fear of gaining weight**
   d. Self-**Evaluation** is influenced by weight/shape
   e. Sub-types:
      i. **Restricting** – (e.g. ↓ intake, skipping meals)
      ii. **Binge-eating/purging** – (e.g. ↑ food intake w/ compensatory restricting, vomiting, &/or laxative use)
      iii. 50% of AN cross-over from restricting to binge-purge type (over 7 years)

2. DSM-IV definition of BN (BICEN mnemonic) (slide 9)
   a. **Binge eating episodes** – recurrent
   b. Inappropriate compensatory behavior – recurrent
   c. **Compensatory behavior** 2X/week for 3 months
   d. Self-**Evaluation** due to body weight/shape
   e. Not occurring exclusively during AN
   f. Sub-types:
      i. **Purging** (e.g. vomiting, laxatives, diuretics)
      ii. Non-purging (restricting food intake, over exercising)
   g. Cross-over rates 16,17
      i. 50% of BN – overweight from overeating – rarely crosses over to AN
      ii. 30% of AN – cross over to BN

3. Eating disorder – Not Otherwise Specified (ED-NOS) (slide 10)
   a. AN or BN with partial criteria
      i. AN w/o amenorrhea or at normal body weight
      ii. BN with compensatory behavior (e.g. running, purging) < 2X week
      iii. Purging disorder without binges 18 or chewing food & then spitting out
   b. Partial criteria AN and BN have ♀:♂ ratio of 2:1 19
c. Binge eating disorder (BED)\textsuperscript{20}

i. Recurrent episodes of binge eating (i.e. eating a lot in < 2 hrs)

ii. A sense of lacking control over eating

iii. Binges are associated with 3 or > of the following

- Eating much more rapidly than normal
- Eating until feeling uncomfortably full
- Eating a large amount of food when not feeling physically hungry
- Eating alone/embarrassed by how much one is eating
- Feeling disgusted with self, depressed or very guilty after overeating

iv. Marked distress regarding binges

v. Binge eating occurs ≥ 2X/week x 6 mo's

vi. Binges – not w/ compensatory behaviors (fasting/purging/exercise)

vii. Does not occur during the course of AN or BN

4. Alcohol abuse/definitions (slide 11)

a. DSM-IV alcohol abuse

i. Repeated problems in same 12 months w/ ≥ 1 of:

ii. Inability to fulfill role obligations

iii. Use in physically hazardous situations

iv. Legal problems

v. Social or interpersonal problems

vi. Never met criteria for dependence

b. DSM-IV alcohol dependence

i. Repeated problems over same 12 months w/ ≥ 3 of:
ii. Tolerance: ↑ use for same effect; ↓ effect with same amount used

iii. Withdrawal syndrome or ↑ alc use to ↓ anxiety/ insomnia/tremors

iv. Use larger/longer than intended

v. Desire or unsuccessful efforts to cut down

vi. ↑ time spent in alcohol-related activities

vii. Give up important activities

viii. Continued use despite persistent problems

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III. Relationships of ED & AUD

A. EDs & AUDs can co-occur (slide 13)

1. A meta-analysis – 41 studies of ♀ (1985-2006) = ↑ risk of AUD w/ BN, but not AUD & AN 21

   a. Only 4 studies showed a negative association

   b. Disordered eating behaviors may be more strongly associated w/ alcohol related problems rather than use 22

   c. Cross over from BN to AUD or vice-versa may ↑ occur over time 23

      i. 1/2 – ED occurs before AUD

      ii. 1/3 – AUD occurs before ED

      iii. 10% had onset of both AUD & ED – same year

2. Comorbidity increases severity?

   a. No, but AUD severity, not BN severity – predict poorer outcome 23

   b. AUD severity in AN → ↑↑ risk of death 14

   c. Screen for AUDs in AN!

B. ED + AUD Comorbidity (slide 14)
1. Anxiety disorders = ↑ risk factor for developing an ED &/or AUD
   a. 2/3 of EDs have anxiety ds – before onset of ED 24
   b. Anxiety also almost always precedes onset of AUD – not after 25

2. Some similar psychological characteristics in women with BN & AUD
   a. ↑ novelty seeking (thrill seeking/pleasure new experiences) – predispose to BN & AUD 26,27
   b. ↑ novelty seeking & ↑ affect from rewards in BN + AUD, compared to BN w/o AUD 26
      b. Novelty seeking mediates risk of AUD in alcohol dependent families 27

3. Binge eating in ED & heavy drinking in AUD - similar psychological functions 28,29
   a. Women with AUD & ED – binge for emotional relief or reward 28
      i. Heavy drinking – related to needing ↑ reward +/- ↓ intense emotions 29
      ii. Binge eating – ↓ intense emotions +/- ↓ urge/temptations to drink

C. Sociocultural explanations for EDs (slide 15)
   1. Example: dual-pathway model of overeating in BN 30,31
      a. Pressure to be thin & thin-ideal internalization can lead to body dissatisfaction
      b. Body dissatisfaction leads to dieting & negative affect, which leads to bulimic sxs & over-exercising
      c. Neuroticism predispositions further drive body dissatisfaction & visa-versa as well as negative affect, which then drives depression and low self-esteem

D. Common mechanisms: food & alcohol = reward & motivation (slide 16)
   1. Similar dopamine/opiates dysregulation of reward motivation/pleasure in ED & AUD? 32,33
   2. Dopamine release in brain’s mesolimbic system – regulates reward from food/drugs/alcohol 34
      a. Wobbly D2 dopamine receptor (DRD2) – A1 allele - ↓DA binding w/ alc in AUDs 35,36
      b. Example: Wobbly DRD2 A1 allele - ↓DA binding w/ food in BED/BN/obesity 37,38
   3. Opioid dysregulation affects food & alcohol intake in ED & AUD 39,22
      a. Low/moderate alcohol –↑ beta-endorphin in mesolimbic system 39
      b. Strong opiate receptor mu (G allele of A118G) – ↑ opiate binding w/ food in BED 40
c. Opioid receptor kappa 1 (OPRK1) long allele – ↑ opiate binding w/ alcohol in AUD 41

d. Opiate antagonists may help interrupt reinforcing effects of food 42 & alcohol 43

E. Genetic & environmental risk factors (slide 17)

1. Genetics explain 50% of AUD & 70% of ED risks 43,44
   a. Primarily based on twin studies, adoption and family studies
   b. Multiple genes contribute to ↑ & ↓ risks (e.g. asthma & DM polygenic + environmental risks)

2. Sociocultural factors contributing to EDs 45 (Slide 19)
   a. “Thin ideal” + “pressures to be thin” → body disatisfaction → dietary restraint + negative affect → exercise and/or binge/purge cycles
   b. Neuroticism & low self-esteem may be major mediators

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IV. How to screen & identify patients

A. Inquire about disordered eating, self-evaluation based on weight

1. Patient Health Questionnaire (PHQ) – modified PRIME-MD 46 (slide 19)
   a. Patient administered with 15 sections for various psychiatric disorders
      i. Sections 6,7, 8 – have 9 questions (yes/no) to abnormal eating patterns
      ii. “Do you often feel you can’t control what/how much you eat?”
      iii. “Do you ever vomit?”
      iv. Sections 9,10 – have 7 questions (yes/no) to detect alcohol related problems
      v. “Do you drink alcohol? Did your doctor of suggest you should stop?”
   b. Overall accuracy – 85%; sensitivity to detect – 75%; specificity for the illness – 90%

2. Eating Disorder Examination Questionnaire (EDE-Q) - abnormal eat & wt concerns (slide 20)
   a. Patient administered – 28 items (6-point scale)
i. “Have you tried to limit the food you eat to influence your shape/weight?”

ii. “In the past month, have many times did you feel lost control over eating?

b. Sensitivity – 80%, specificity – 80% 47

B. Inquire about hazardous drinking & alcohol-related problems

1. Alcohol Use Disorders Identification Test (AUDIT) (slide 21)
   a. 10-item questionnaire (5-point scale) reviewing drinking patterns & problems 48
   b. Score of ≥ 8 = positive test for hazardous drinking / ↑ risk of alcohol dx
   c. Sensitivity to detect: 50-90%; specificity for disease: 80%

2. AUDIT-C (3-question version of the full 10-item AUDIT)
   a. First 3 questions of the AUDIT – provides a faster screening for AUD 49
      i. How often do you have a drink of alcohol?
      ii. How many drinks of alcohol drinks on one occasion?
      iii. Do you ever have 6 or more on a given day?
   b. Positive score for identifying hazardous drinking → ♂ ≥ 4; Women ≥ 3
   c. Nearly as sensitive/specific as full AUDIT

C. ED complaints & findings (slide 22)

1. Abnormalities found in ED
   a. Complaints:
      i. Constipation (irritable bowel syndrome),
      ii. Gastroesophageal reflux disease,
      iii. Dental cavities,
      iv. Menstrual irregularity
   b. Physical findings:
      i. Emaciated appearance – if anorexic
      ii. Dental erosions – if bulimic,
      iii. Enlarged salivary/parotid glands – if bulimic
   c. Laboratory findings: (Slide 23)
      i. ↑ amylase (>123 u/L),
ii. ↑ alanine & aspartate aminotransferance (ALT = >67u/L / AST = >65u/L),
iii. ↓ potassium (hypokalemia = <3.5mEq/L),
iv. ↓ white blood count (<4.3 x 103mm³),
v. ↓ bone density (osteopenia = < 1.5-2.0 SD /osteoporosis = < 2.0SD)

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V. Management of patients with eating disorders & alcoholism *(slide 25)*

A. Comorbidity of these disorders occur – so which disorder to treat first & what setting?

1. Inpatient hospitalization for ED - severe malnutrition; cannot normalize food intake
   a. Specialized units - nutritional rehabilitation/regular meals/abstinence from binge/purge
   b. Psychotropic interventions & treat psychiatric & medical comorbidities
   c. Psychotherapeutic approaches
   d. More details later about approaches for each disorder

2. Inpatient hospitalization for AUD 1st – if risk for serious withdrawal symptoms
   a. Nutritional rehabilitation/alcohol withdrawal with benzodiazepines
   b. Referrals made for outpatient treatment

3. Partial hospitalization programs
   a. Both AUD & ED treatment – separate programs, lasting 2-4 wks on average
   b. Day programs for ED treatment for AN & BN
      i. 40% remission at 1-yr follow-up (f/u) ⁵⁰
      ii. ↑ BN symptoms after inpatient vs. day treatment, same result @ 3mo f/u ⁵¹
   c. Day programs for AUD – may ↑ abstinence & more cost-effective ⁵²
      i. Day treatment vs. outpatient 62% vs. 39% for self-selected group
      ii. Mid-level severity/self-selected had ↑ abstinence & was more cost-effective
      iii. 20-30% of highly motivated people with AUD can attain remission w/o tx ⁵³,⁵⁴
4. Long-term outpatient programs
   a. Long-term psychotherapy for ED may be indicated - multiple relapses are common
   b. Long-term alcoholic anonymous (AA) group therapy - ↑ outcome
   c. Outcome is good for both disorders
      i. 50% complete, 70% partial remission for EDs - 1 yr after tx
      ii. 50-60% abstain or improve functioning for AUD - 1 yr after tx
      iii. No simple way to match different treatments for specific patients

B. Initial interventions (slide 26)
   1. Directive brief interventions may ↑ compliance & improve outcome
   a. Explain risks for developing an AUD or ED
   b. Educate about dangers of continued heavy drinking and/or unhealthy eating or weight control methods
   c. Provide examples of benefits of change
   2. Brief motivational interviewing may ↑ compliance & is also cost-effective
   a. Feed back on risks
   b. Responsibility for change
   c. Advice
   d. Menu of treatment options
   e. Empathetic interaction
   f. Self-efficacy enhancement

C. Psychotropic medication interventions for ED & AUD
   1. Limited efficacy of psychotropic medications for ED (slide 27)
   a. 3 randomized controlled trials (RCTs) of fluoxetine (Prozac) at 60mg qD
      i. Blocks serotonin reuptake
      ii. 50% ↓ binge frequency in BN in the short-term (8-16 wks)
      iii. No long-term difference in remission rates (1 yr or longer)
      iv. Side-effects include emotional blunting, possible agitation, insomnia
   b. 2 RCTs of fluoxetine 60mg qD w/ or w/o cognitive behavioral therapy (CBT)
      i. Remission @16wks = 12% w/ CBT vs 20% CBT + med or placebo
ii. Remission @16wks = 25% w/ CBT + med vs 15% w/ med only 69

c. Fluoxetine no better than placebo for BED 70

d. RCT of Toparimate (Topamax) 25-400mg qD:
   i. ↓ binge episodes from 5 to 3 /day – for both BN & BED 71
   ii. Weight loss of ~ 5 pounds over 10 weeks, compared to 0 for placebo

2. Limited efficacy of psychotropic medications for AUD (slide 28)
   a. FDA treatments: disulfiram (Antabuse), naltrexone (Revia), acamprosate (Campral) 72
      i. Most evidence of efficacy for naltrexone 50-100mg qD:
         - Blocks opiate receptors
         - 25% ↓ rate of heavy drinking 73
         - Response may be better for those with a family history of AUD 74
         - Safest side-effect profile (drowsiness/drug interactions/liver fxn)
      ii. Acamprosate – ↑ time to relapse (36% abstinent vs 23% placebo @ 6mo) 75
         - Blocks glutamate/GABA
         - Can cause GI upset & diarrhea
      iii. Combined naltrexone 50mg qD & acamprosate 666mg TID - synergistic 76
      iv. Disulfiram 250mg qd – ↑ abstinence & ↓ relapse in 12 wk trial 77
         - Causes an aversive response if alcohol is consumed during its use
         - Limited evidence of efficacy
         - Potentially dangerous side effects: liver disease, depression, psychosis
   b. Non-FDA treatment: Topiramate (Topamax) 300mg/d → > 50% ↓ heavy drinking dys 78
      i. Blocks glutamate transmission
      ii. ↑ abstinence from 35 to 60 days
      iii. ↓ daily drinks from 6 to 4
      iv. ↑ measures of liver problems (↓ GGT by >50%)
   c. Naltrexone, acamprosate & topiramate – ↓ alcohol intake if abstinence isn’t possible

3. Possible overlapping efficacy for EDs & AUDs (slide 29)
   a. No good evidence for naltrexone for EDs
   b. An open label trial of acamprosate for BED & alcohol dependence – 4wks 79
i. ↓ cravings for food in AUD

ii. No weight gain

c. RCTs of Topiramate for BED & AUDs

   i. ↓ heavy drinking days by 50% in AUD
   
   ii. ↓ weight in BED by 7lbs in 21 wks

   iii. ↓ binge episodes a week from 3.5 to 2.5 & ↓ weight by 5kg in 16 wks

D. Psychotherapeutic interventions for EDs & AUDs (slide 30)

1. Efficacy of psychotherapeutic approaches in ED

   a. Most evidence for family therapy in adolescents

      i. Corrects dysfunctional/enmeshed boundaries between parents & children
      
      ii. Therapist supports adolescent individuation & ↓ guilt/criticism from parents

   b. Efficacy of cognitive behavioral therapy (CBT) for BN & BED

      i. CBT = systematic approach to ↓ dysfunctional thoughts/behavior
      
      ii. Guided self-help or group options
      
      iii. 60% abstinent & ↓ purging by 80% vs treatment as usual - 16 wks

2. Efficacy of psychotherapeutic approaches in AUD

   a. A variety of psychosocial & psychotherapeutic approaches may ↑ outcome

   b. Alcoholics anonymous (AA) support groups may ↑ time to relapse

      i. “12 step” approach examples:

         - One cannot control addiction

         - Recognize a greater power can give strength

         - Turn life over to that power

         - Make a list of those harmed & make amends with them

      ii. AA should be used in conjunction with psychotherapeutic approaches

VI. Summary (slide 31)

A. Definitions of ED & AUD are important to know, can occur together & are common

B. Significant relationships between ED & AUD - points to overlapping etiology & possible tx

C. Screening & identification are important – under recognized & under treated
D. Assessment & management of each disorder improves outcomes
References


