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Addiction: Alcohol Etiology, Risk, and Assessment

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Goals

- Describe the diagnostic features of alcohol use disorder
- Identify risk factors for alcohol use disorder
- Describe the features of tools to assess alcohol use disorder

Alcohol Use Disorder

- From the DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition):
  - a problematic pattern of alcohol use leading to clinically significant impairment or distress, as manifested by at least two of the following within a 12-month period:
    1. alcohol is taken in larger amounts or over a longer period of time than was intended
    2. there is a persistent desire, or unsuccessful attempts, to cut down on alcohol use

Alcohol Use Disorder

3. a great deal of time is spent in activities necessary to obtain alcohol, use alcohol, or recover from its effects
4. craving, or a strong desire/urge to use alcohol
5. recurrent alcohol use resulting in a failure to fulfill major role obligations at work, school, or home
6. continued alcohol use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of alcohol
7. important social, work, or recreational activities are given up or reduced because of alcohol use

Alcohol Use Disorder

8. recurrent alcohol use in situations in which it is physically hazardous
9. alcohol use is continued despite the knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by alcohol
10. tolerance, defined by:
    a. a need to markedly increase amounts of alcohol to achieve intoxication or the desired effect
    b. a markedly diminished effect with continued use of the same amount of alcohol

Alcohol Use Disorder

11. withdrawal, as manifested by either of the following:
    a. the characteristic withdrawal syndrome for alcohol
    b. alcohol (or another substance, such as a benzodiazepine) is taken to alleviate or avoid withdrawal

Alcohol Use Disorder

- From the DSM-5:
  - alcohol use disorder can have specifiers, including:
    - in early remission: between 3 and 12 months of no symptoms, except that the "craving" symptom may be met
    - in sustained remission: more than 12 months of no symptoms, excepting the "craving" symptom again
    - in a controlled environment: the patient is in a place where alcohol access is restricted (e.g., prison, a foreign country without alcohol)

Alcohol Use Disorder

- From the DSM-5:
  - severity
    - mild: 2-3 symptoms
    - moderate: 4-5 symptoms
    - severe: 6 or more symptoms

Alcohol Use Disorder

- These diagnostics are markedly different from the DSM-IV

The American Journal of Psychiatry

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Volume 170, Issue 8, August 2013, pp. 834-851

Next Article

Perspectives

DSM-5 Criteria for Substance Use Disorders: Recommendations and Rationale

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Alcohol Use Disorder

- Those who were trained on the DSM-IV may remember that the DSM-IV had two different disorders: abuse and dependence – this was eliminated for the DSM-5

Alcohol Use Disorder

- Dependence was diagnosed when three symptoms were met:
  - withdrawal
  - tolerance
  - using alcohol more or longer
  - repeated attempts to quit or reduce use
  - time spent using alcohol is problematic
  - physical/psychological problems related to use
  - activities are given up to use alcohol

Alcohol Use Disorder

- If dependence was not met, abuse was diagnosed if at least one abuse criterion was met:
  - hazardous use
  - social/interpersonal problems related to use
  - neglecting major roles to use alcohol
  - having legal problems related to alcohol

Alcohol Use Disorder

- This division had been made because of the concept of alcohol use disorder having two dimensions:
  1. having a "dependence syndrome"
  2. consequences of alcohol use
- The DSM-IV placed dependence over abuse, because if someone met criteria for dependence they were not to be diagnosed with abuse

Alcohol Use Disorder

- The dependence dimension was reliable, and related to treatment use, alcohol consumption, and impaired functioning
- However:
  1. this hierarchical diagnostic set reduced the validity and reliability of the abuse diagnosis
  2. a syndrome requires more than one symptom, but many cases of abuse were diagnosed based on meeting one symptom of abuse (often hazardous use)

Alcohol Use Disorder

  3. abuse was implied to be less severe than dependence, but some aspects of abuse could be very impairing (e.g., repeatedly losing jobs due to alcohol use)
  4. assumptions about the relationships between abuse and dependence were not supported by research (e.g., the assumption that abuse is just a precursor to dependence, or that all cases of dependence also met criteria for abuse)

Alcohol Use Disorder

- **Further:**
  1. **the dual-diagnosis system resulted in some oddities for diagnoses (e.g., "high-functioning" alcohol users who experienced significant tolerance and physical problems from alcohol use, but no other problems and no hazardous use or social/interpersonal/work/ school problems would not be diagnosable with anything)**
  2. **abuse criteria alone had better reliability when dependence was not considered**

Alcohol Use Disorder

- **Further:**
  3. **factor analyses of the criteria that ignored that DSM hierarchical diagnostics indicated that the criteria were either one factor, or two highly related factors, suggesting that the symptom cluster should be one disorder**

Alcohol Use Disorder

- The "legal problems" criterion was also a problem
  - the prevalence of legal problems was low
  - this criterion had poor fit with the other criteria
  - this criterion added little to the other ones (e.g., someone in legal trouble for drinking and driving already meets the hazardous use criterion; someone in legal trouble for fighting while drunk probably meets criteria for social/interpersonal problems, etc.)
  - legal problems was dropped as a criterion

Alcohol Use Disorder

- "Craving" was added as a criterion
  - craving is supported as a feature of substance use by research
  - adding this criterion improved diagnostics in test assessments
  - clinicians who work with alcohol use disorder were supportive of adding this criterion

Alcohol Use Disorder

- "Consumption" was considered as a new criterion; however, adding items about alcohol consumption did not improve diagnostics

Alcohol Use Disorder

- Prevalence in the United States
  - the 12-month prevalence is 4.6% among those 12-17 years of age, and 8.5% among those 18 years of age and older
  - rates are higher among men (12.4%) than women (4.9%)
  - prevalence is highest among 18-29-year-olds (16.2%)

Alcohol Use Disorder

- Etiology
  - individuals with alcohol use disorder typically begin using alcohol to intoxication in the mid-teens
  - legal or behavioral problems related to alcohol use may also arise during this time (e.g., fighting, missing school)
  - the onset of alcohol use disorder is typically in the late teens or early 20s; most individuals who will have the disorder are diagnosable before age 30

Alcohol Use Disorder

- Risk factors
  - cultural attitudes about alcohol use
  - the legal and practical availability of alcohol
  - stress and poor coping
  - peer substance use
  - exaggerated expectations of the effects of alcohol

Alcohol Use Disorder

- Risk factors
  - roughly half of the variance in risk for alcohol use disorders is attributable to genetic influences
  - risk is 3-4x greater among persons with close relatives with alcohol use disorder
  - the risk increases with a greater number of relatives with the disorder, genetic proximity to those with the disorder, and the severity of the problems
  - twin studies demonstrate a high concordance rate of alcohol use disorder

Alcohol Use Disorder

- Risk factors
  - there is a 3-4x increase in risk for the disorder for children of people with the disorder, even when they are adopted by parents who do not have the disorder
  - higher vulnerability is also associated with comorbid schizophrenia or bipolar
  - impulsivity
  - low sensitivity to alcohol use
- Risk factors can change with age

JOURNAL OF ADOLESCENT HEALTH 2004;35:529.e7–529.e18

REVIEW ARTICLE

Adolescent Alcohol Initiation: A Review of Psychosocial Risk Factors

JOHN E. DONOVAN, Ph.D.

- **51% of 8th graders, 70% of 10th graders, and 80% of 12th graders have tried alcohol**
- **Use of alcohol in adolescence is associated with myriad other health risk behaviors, including cigarette use, illicit drug use, and risky sexual behavior**
- **Use of alcohol in adolescence also increases the risk for negative social outcomes, including physical and sexual assault, car accidents, school dropout, pregnancy, and sexually transmitted infections**

- Alcohol use in adolescence is also associated with later alcohol use disorders
- The researchers examined studies that assessed factors leading to the onset of any drinking (as opposed to problem drinking or alcohol abuse)
- This is because the definitions of alcohol abuse have not been clear across studies – using criteria such as regular drinking, significant drinking, drunkenness, or onset of use of other forms of alcohol (e.g., hard liquor)

- Examined risk factors, defined as conditions that precede the onset of drinking initiation and that can be used to divide individuals into high and low risk categories
- The research also examined only longitudinal studies, to eliminate the problems associated with looking at cross-sectional data to determine risk factors

- **The researchers conducted a literature search, and included research that:**
  1. **consisted of samples of middle and high school students**
  2. **contained at least two waves of data**
  3. **lifetime (any use) alcohol use data was assessed at all waves of data collection**
  4. **the analyses focused on onset of use during the study (i.e., people who abstained from use at Time 1, but started at Time 2), allowing for examination of longitudinal effects**

- **The researchers assessed risk in terms of:**
  - **sociodemographic variables**
  - **family variables**
  - **peer variables**
  - **personality variables**
  - **behavioral risk variables**

- **Sociodemographic risk**
  - gender did not predict drinking initiation
  - age is associated with onset, such that individuals in the highest risk age category (14-16) have the highest risk
  - White, Native American, and Hispanic adolescents have higher alcohol use risk than Asian American and African American adolescents – White adolescents also tend to start drinking earlier than non-White peers
  - parental education had no impact on onset

- **Family risk**
  - one study suggested that alcohol use rates were higher among those who lived with a stepparent versus those living with both biological parents
  - adolescent drinking was associated with father drinking, mother prescription drug use, and sibling drug use, but not to mother's drinking, father or mother smoking, or father or mother marijuana use

- **Family risk**
  - **perceived parental approval of drinking was also associated with onset of alcohol use**
  - **lower levels of general parental support and higher parental permissiveness of alcohol use also predicted earlier onset of alcohol use**

- **Peer risk**
  - **onset of drinking is associated with peer involvement in delinquency and alcohol/drug use, and greater identification with friends**
  - **social assertiveness predicts later onset of alcohol use**
  - **drinking behavior of a best friend may be especially influential**
  - **perceiving that more of one's friends drink is associated with earlier onset of drinking**

- **Personality risk**
  - **onset of drinking was associated with lower conventionality, more negative affect, less behavioral control, and higher expectancies for alcohol**
  - **also associated with lower value for academic achievement, lower school motivation, lower bonding with one's school, lower levels of religiousness, less orientation toward hard work, greater rebelliousness, and greater rejection of parental authority**

- **Behavioral risk: onset of alcohol use is associated with prior delinquency, having fewer friends, watching more television, and having lower school grades**

- **However, as mentioned, this study focused on individuals beginning alcohol use in general, rather than behaviors indicative of problems**

Original Investigation

Extreme Binge Drinking Among 12th-Grade Students in the United States

Prevalence and Predictors

Megan E. Patrick, PhD; John E. Schulenberg, PhD; Meghan E. Martz, MA; Jennifer L. Maggs, PhD; Patrick M. O'Malley, PhD; Lloyd D. Johnston, PhD

- **Examined correlates of binge drinking in moderate (5-9 drinks), heavy (10-14 drinks) and extreme (15 or more drinks) drinking among 16,332 high school seniors**
- **Participants were recruited from 2005 to 2011 from across the US**
- **Extreme binge drinking was reported by 5.6% of the sample**

- **Extreme binge drinking was associated with:**
  - **being male (3.2x risk)**
  - **living in a rural area (1.5x risk)**
  - **cutting school (1.1x)**
  - **going out at night with friends (1.2x)**
  - **friends getting drunk (1.8%)**
  - **smoking cigarettes (1.4x)**
  - **smoking marijuana (1.2x)**

- **Protective factors**
  - **Black racial/ethnic identity rather than White (2.6x lower risk)**
  - **parental education (some college: 1.3x)**
  - **personal disapproval of binge drinking (2x)**
  - **perceived risks of binge drinking (1.4x)**

Available online at www.sciencedirect.com
ScienceDirect
Addictive Behaviors 32 (2007) 2062–2086
ADDICTIVE BEHAVIORS

Predictors of alcohol use during the first year of college: Implications for prevention

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Brown University, Center for Alcohol and Addiction Studies, Box G-BH, Providence, RI 02912, United States

- **Alcohol consumption often rises during first year of college; these researchers reviewed existing research on first-year alcohol use**
- **Men tend to drink more than women**
- **Most students did not report any drinking during any given week, but when drinking did occur it tended to be heavy episodic drinking – about half of those who drank reported heavy episodic drinking**

- Drinking moved along with course schedules, with most occurring Thursday-Saturday and less Sunday-Wednesday of each week
- Drinking was also high immediately upon arriving on campus and during breaks, and lowest during midterms and finals
- Freshmen are overrepresented in alcohol-related deaths, injuries, and disruptive behavior

- First-year drinking behavior is moderated by:
  - sensation seeking: those with a preference for physiological arousal and novel experiences, including taking risks, are at higher risk for heavy drinking
  - race/ethnicity: White students drink the most, followed by Hispanic students, followed by African American students
  - gender: male students drink more, and more often, than female students

- First-year drinking behavior is moderated by:
  - religiosity: students who are more religious report lower rates of alcohol use
  - pre-college alcohol use: patterns of alcohol use that begin in adolescence are typically maintained in college
  - parental influence: good parent-child relationships are associated with lower alcohol use, and more permissive parental attitudes toward alcohol are associated with higher use

- Other factors that influence college drinking:
  - coping: in the absence of other means by which to reduce stress, students may turn to alcohol
  - alcohol expectancies: expectations that alcohol will reduce tension, increase assertiveness, and otherwise be positive for one's life are a strong predictor of increases in alcohol use in college
  - drinking motives: a desire to fit in and make friends is strongly associated with alcohol use

- **Other factors that influence college drinking:**
  - **perceived norms: students believe that others drink more than they really do, and that peers are more approving of alcohol use than they really are**
  - **Greek membership: heavy drinkers in high school are more likely to join a fraternity/sorority, and alcohol use increases while attempting to join a fraternity and after joining**
  - **drinking game participation: playing drinking games is associated with greater and more frequent drinking and more problem drinking**

Assessment of Alcohol Use Disorders

Assessment

- **Differential diagnosis is important to understand the nature of the disorder, if present**
- ***Non-pathological alcohol use* is common – most people who drink sometimes become intoxicated, but only 20% of those who drink at all will ever be diagnosable with alcohol use disorder**

Assessment

- ***Other substance use* may also produce similar effects to alcohol use – a patient may drink alcohol moderately, but have symptoms such as missed work or other issues due primarily to use of another drug**
- ***Conduct disorder/antisocial personality disorder* is a common comorbid condition**

Assessment

- Lab tests
  - one indicator of heavy alcohol use is an elevation in gamma-glutamyltransferase (GGT) to over 35 units – about 70% of people with high GGT levels are heavy drinkers
  - another test is for elevations in carbohydrate-deficient transferrin (CDT), over 20 units
  - these measures return to normal levels after a few days of not drinking, and so are useful only in the short term
  - liver function tests can also identify long-term effects of alcohol abuse

Assessment

- Other physical symptoms
  - dyspepsia (indigestion)
  - nausea
  - bloating
  - tremor
  - insomnia
  - sexual dysfunction
  - menstrual irregularity
  - spontaneous abortion
  - weight gain

Assessment

- Questionnaire measures
  - the Alcohol Use Disorders Identification Test (AUDIT)
    - the AUDIT has 10 items, rated on a scale from 0-4 – five items for most questions, three for a few (e.g., How often do you have six or more drinks on one occasion?)
    - administration can be aided by giving a drink conversion chart (e.g., explaining how much of a drink alcoholic drinks such as beer, wine, or spirits count)

Assessment

- Questionnaire measures
  - the Alcohol Use Disorders Identification Test (AUDIT)
    - a score of eight or more is suggestive of harmful or hazardous drinking
    - alcohol dependence is indicated by scores of above 13 among women and 15 among men
    - the AUDIT has official translations in more than 20 languages, and is often administered in intake screenings

Assessment

- Questionnaire measures
  - the Alcohol Use Disorders Identification Test (AUDIT)
    - the AUDIT-3 is an even more brief assessment, containing only three of the 10 items from the AUDIT
    - a score of four for men, or three for women, suggests hazardous drinking or alcohol use disorder

Sensitivity and Specificity

- Sensitivity and specificity are one approach to understanding tests – this can be applied to tests such as pregnancy or HIV tests, but also to the results of screener questionnaires
- We want "true positives" (i.e., those with the disorder) to not be missed – this is "sensitivity" – and we want "false positives" (i.e., saying someone has the disorder when they don't) to be minimal – this is "specificity"

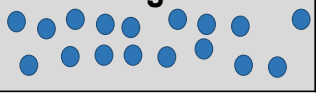
Sensitivity and Specificity

- A test that is extremely sensitive rarely misses a case where the disorder is present, but it might do so at the risk of returning too many false positives, which should be avoided
- A test that is extremely specific will rarely return a positive result when the disorder is not present, but it might do so by missing some of the more unclear cases

Sensitivity and Specificity

- A test can be highly sensitive and highly specific, meaning that it does not miss many real positives and does not give many false positives
- In psychology/psychiatry, since there is no lab test for alcohol use disorder akin to a pathologist report about the presence of a disease, we typically rely on concordance with a clinical interview or other specific criterion to determine the “true” result in a sample

Sensitivity and Specificity

	Clinical interview Positive	Clinical Interview Negative
AUDIT positive	True positive 	False positive 
AUDIT negative	False negative 	True negative 

Diagnostic Usefulness of Brief Versions of Alcohol Use Disorders Identification Test (AUDIT) for Detecting Hazardous Drinkers in Primary Care Settings

A. GÓMEZ, PH.D.,† A. CONDE, PH.D., J.M. SANTANA, M.D., AND A. JORRÍN, M.D.

Family Medicine, San Gregorio Health Care Center and Internal Medicine, Doctor Negrin Gran Canaria General Hospital, Las Palmas, Spain

- Gathered data from 500 participants (219 men, 281 women)
- Completed the AUDIT and a clinical interview to assess alcohol use
- During the interview, standardized drinking units were assessed, and World Health Organization (WHO) criteria were used to determine hazardous drinking based on amount taken in

- Several versions of the AUDIT were calculated:
  - Full AUDIT
  - AUDIT-3 (third item only [six or more drinks])
  - AUDIT-C (first three items of the AUDIT)
  - AUDIT-PC (1st, 2nd, 4th, 5th, and 10th items of the AUDIT)
  - FAST (3rd, 5th, 8th, and 10th items)

- 9% of the sample was identified as hazardous drinkers based on the WHO criteria
- All versions of the AUDIT demonstrated sensitivity over 80%, with the AUDIT-C having the highest (100%)
- All versions of the AUDIT other than the AUDIT-C demonstrated specificity over 90% (AUDIT-C was 80%)
- The full AUDIT fared the best, followed by the AUDIT-C and AUDIT-PC

Assessment

- Questionnaire measures
  - the CAGE questions
    - four yes/no questions
      - Have you ever felt you should Cut down on your drinking?
      - Have people Annoyed you by criticizing your drinking?
      - Have you felt bad or Guilty about your drinking?
      - Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover (i.e., an Eye opener)?
    - a total score of two is considered indicative of problem drinking

Assessment

- Questionnaire measures
  - the TWEAK questions
    - How many drinks does it take before you begin to feel the first effects of alcohol? [Tolerance]
      - three or more drinks = two points
    - Have your friends or relatives worried about your drinking in the past year? [Worried]
      - Yes = one point

Assessment

- Questionnaire measures
  - the TWEAK questions
    - Do you sometimes take a drink in the morning when you first get up? [Eye-opener]
      - Yes = one point
    - Are there times when you drink and afterwards can't remember what you said or did? [Amnesia]
      - Yes = one point

Assessment

- Questionnaire measures
  - the TWEAK questions
    - Do you sometimes feel the need to cut down on your drinking? [Kut down]
      - Yes = one point
    - A score of three or more is considered to indicate problem drinking

Assessment

- Questionnaire measures
  - other brief screeners
    - "On any single occasion during the past three months, have you had more than five drinks containing alcohol?" – 62% sensitivity and 93% specificity for detecting problem drinking
    - "Have you ever had a drinking problem?" – 40-70% sensitivity, 93-99% specificity

Assessment Recommendations: Adolescents

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Practitioner Review: Adolescent alcohol use disorders: assessment and treatment issues

Francheska Perepletchikova,[1] John H. Krystal,[1,2] and Joan Kaufman[1,2]

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Assessment Recommendations: Adolescents

- Some aspects of assessment for adolescents are unique, and there are some developmental issues
- Because adolescent drinking is so indicative of adult drinking, identifying problems early can help to curtail the influence of alcohol use and abuse

Assessment Recommendations: Adolescents

1. In considering more or more frequent use of alcohol than intended, peer pressure may be an especially important variable to assess – excessive drinking is often due to peer pressure, not compulsions as with adults
2. Parent data is not reliable – parent data alone may miss more than 60% of cases of alcohol use disorder

Assessment Recommendations: Adolescents

3. Assessment of comorbidity and suicidality is important
   - the combination of use of alcohol and the accessibility of a loaded gun in a household appear to be a major risk factor for adolescent suicide
   - physical and sexual abuse are also higher among adolescents who use alcohol heavily

Addiction: Alcohol Etiology, Risk, and Assessment

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