Tobacco and other substance co-use among young adults

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• I am an employee of Truth Initiative, developer of BecomeAnEx.org
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• No other financial relationships to disclose.
Today’s objectives

• About me

• Test your knowledge (a few quizzes!)

• Provide basic information about alcohol, tobacco, and marijuana/other drug use and misuse in young people

• Discuss some hot-off-the-press data
Who am I?

• Research Investigator

• Schroeder Institute for Tobacco Research and Policies Studies at Truth Initiative

• Background in Clinical Psychology

• Specialize in alcohol, substance use, and mental health factors correlated with tobacco use
  • Young adults and college students
Why young adults?

- Highest rates of alcohol, tobacco, and other drug use
- Initiation and escalation of substance use begins during this time period
- Ideal time disseminate public health messages
  - Prevent escalation to future use
  - Deter individuals from becoming problem users
## National prevalence of substance use by age

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Marijuana use (past month)</th>
<th>Binge drinking</th>
<th>Any tobacco use (past month)</th>
<th>Cigarette use (past month)</th>
<th>Cigar use (past month)</th>
<th>Hookah use (past month)</th>
<th>E-cigarette use (past month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-17</td>
<td>7.0%</td>
<td>5.8%</td>
<td>6.0%</td>
<td>4.2%</td>
<td>2.1%</td>
<td>1.7%</td>
<td>3.1%</td>
</tr>
<tr>
<td>18-25</td>
<td>19.8%</td>
<td>39.0%</td>
<td>33.0%</td>
<td>26.7%</td>
<td>8.9%</td>
<td>10.7%</td>
<td>12.5%</td>
</tr>
<tr>
<td>26+</td>
<td>6.5%</td>
<td>24.8%</td>
<td>24.5%</td>
<td>20.0%</td>
<td>4.3%</td>
<td>0.9%</td>
<td>5.8%</td>
</tr>
</tbody>
</table>

Peak age of substance use
Alcohol use and drinking
What is a standard drink?

- Wine?
  - 4-5 oz
- Beer?
  - 12 oz
- Liquor?
  - 1.5 oz
Standard drink (SD) conversion

- 12 fl oz of regular beer
- 8-9 fl oz of malt liquor
- 5 fl oz of table wine
- 1.5 fl shot of 80-proof spirits
Glass of wine (SD) conversion

1/5th of a bottle: 150ml
1/4th of a bottle: 187ml
1/3rd of a bottle: 250ml
1/2 of a bottle: 375ml
Party cup (SD) conversion

- Beer (2/4 from top line)
- Malt Liquor
- Wine (2/3 from bottom line)
- Liquor (bottom line)
### Percentage of U.S. adults 18+ with past-year alcohol abuse or dependence

<table>
<thead>
<tr>
<th>Age group</th>
<th>Past-year disorder</th>
<th>Any treatment</th>
<th>Type of treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Abuse</td>
<td>Dependence</td>
<td></td>
</tr>
<tr>
<td>All ages</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.7</td>
<td>3.8</td>
<td>7.1</td>
</tr>
<tr>
<td>Young Adult (18-29)</td>
<td>7.0</td>
<td>9.2</td>
<td>5.9</td>
</tr>
<tr>
<td>18-24</td>
<td>6.7</td>
<td>11.6</td>
<td>6.4</td>
</tr>
<tr>
<td>25-29</td>
<td>7.3</td>
<td>5.7</td>
<td>4.9</td>
</tr>
<tr>
<td>Midlife (30-59)</td>
<td>5.0</td>
<td>3.0</td>
<td>8.5</td>
</tr>
<tr>
<td>30-44</td>
<td>6.0</td>
<td>3.8</td>
<td>8.9</td>
</tr>
<tr>
<td>45-59</td>
<td>3.9</td>
<td>2.0</td>
<td>7.5</td>
</tr>
<tr>
<td>Senior (60+)</td>
<td>1.4</td>
<td>0.5</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Source: NIAAA 2001-2002 NESARC data

You will see these untreated individuals in your practice
Quiz time???

What is the definition of **binge drinking**?

a. 5 drinks per episode for men/4 drinks for women
b. 2 drinks a week for men, 1 drink a week for women
c. Drinking a lot in one night or until you black out
d. None of the above
Quiz time???

What is the definition of binge drinking?

a. 5 drinks per episode for men/4 drinks for women

Why do we care about binge drinking?

• Binge drinking increases risk of tobacco use
• Binge drinking is very common
AlcoPops (“wine cooler”)

Just how much FUEL is there in one can of Four Loko?

One 23.5oz can of Four Loko at 12 percent alcohol by volume contains the same amount of alcohol as 4.7 shots of 80 proof vodka, 4.7 bottles of beer or 4.7 glasses of red wine.

How “easy” it is to binge drink....
AlcoPops

Can you see the warning label?
Young people’s “myths” about drinking
Myth 1

“Drinking coffee or other caffeinated beverages helps you sober up.”
Answer 1

- Only time will remove alcohol from the system
- It takes the body approximately 1 hour to eliminate the alcohol in one standard drink
- “Give a drunk a cup of coffee and all you have is a wide-awake drunk.”
• The more quickly you drink, the more quickly you reach your peak BAC.
  • Peak BAC typically reached in 60-90 minutes (sex/gender, age, weight, etc)

• The liver eliminates alcohol at the average rate of one drink per hour.

• If a person drinks faster than this, the remainder will circulate in the blood stream until the liver can get rid of it (hence alcohol toxicity).
Peak BAC

Example: Drinking starts at 9pm, stops at 1:30am, 2 drinks/hour. The BAC continues to rise for 30 minutes after drinking discontinues. There is an average elimination rate of 0.015% per hour. The drinker is still impaired at 9:30a.m.!

Tobacco co-use with other substances
Tobacco co-use with other substances

Tobacco use alone is much less popular than alcohol and tobacco use!

SOURCE: Falk et al 2006
Tobacco co-use with other substances

PREVALENCE OF ALCOHOL AND MARIJUANA USE BY PAST 30-DAY TOBACCO PRODUCT USE IN YOUNG ADULTS AGED 18-24.

Tobacco co-use with other substances

MULTINOMIAL LOGISTIC REGRESSION MODELS OF CORRELATES OF PAST 30-DAY USE OF EMERGING TOBACCO PRODUCTS IN YOUNG ADULTS AGED 18-24.

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past 30-day cigarette use</td>
<td>AOR</td>
<td>AOR</td>
<td>AOR</td>
<td>AOR</td>
</tr>
<tr>
<td>Past 30-day LCC use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past 30-day e-cigarette use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past 30-day hookah use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Alcohol use (every day/some days)**
- Model 1: 4.49**
- Model 2: 6.66**
- Model 3: 9.03*
- Model 4: 9.97*

**Marijuana use (every day/some days)**
- Model 1: 2.31*
- Model 2: 8.06**
- Model 3: 3.53*
- Model 4: 1.93

Note. Models control for age, gender, race/ethnicity, and education

Alcohol and marijuana use are differentially associated with a variety of tobacco products

Tobacco co-use with other substances


SOURCE: Population Assessment of Tobacco and Health Study, Wave 1
Tobacco co-use with other substances


SOURCE: National Survey of Drug Use and Health
Marijuana and tobacco co-use
Marijuana and tobacco co-use

Marijuana and cigar co-use becoming increasingly prevalent
- 26% of marijuana users currently use cigars; 42% use blunts
- Correlates of marijuana and cigar co-use:
  - Male
  - African-American
  - Aged 18-35
  - Cigarette, alcohol, illicit drug use

More than half of US states have legalized, decriminalized, or medicalized marijuana
- 45% increase in past 30-day marijuana use 2007 - 2014

Marijuana and tobacco co-use

Cigar use has more than doubled in past 10 years
• Coupled with declines in cigarette use
• Could be explained by lower cost and inclusion of flavors in cigars relative to cigarettes

Some important public health questions:
• What are correlates and consequences of marijuana and cigar use?
• Is marijuana use driving increased cigar use?

Marijuana and tobacco co-use

PREVALENCE OF PAST 30-DAY CIGAR-ONLY, BLUNT-ONLY, MARIJUANA-ONLY, AND DUAL USE BY AGE, NATIONAL SURVEY OF DRUG USE AND HEALTH

Marijuana and tobacco co-use

ADJUSTED ODDS RATIOS OF SUBSTANCE USE AND MENTAL HEALTH CORRELATES OF CIGAR, BLUNT, MARIJUANA, AND DUAL USE (ADJUSTING FOR DEMOGRAPHICS).

<table>
<thead>
<tr>
<th>Past 30-day use</th>
<th>Cigar-only</th>
<th>Blunt-only</th>
<th>Non-blunt marijuana</th>
<th>Dual cigar-blunt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco use</td>
<td>3.55&lt;sub&gt;a&lt;/sub&gt;**</td>
<td>3.58&lt;sub&gt;a&lt;/sub&gt;**</td>
<td>2.64&lt;sub&gt;b&lt;/sub&gt;**</td>
<td>5.85&lt;sub&gt;c&lt;/sub&gt;**</td>
</tr>
<tr>
<td>Alcohol use</td>
<td>2.86&lt;sub&gt;a&lt;/sub&gt;**</td>
<td>5.51&lt;sub&gt;b&lt;/sub&gt;**</td>
<td>2.61&lt;sub&gt;a&lt;/sub&gt;**</td>
<td>11.77&lt;sub&gt;c&lt;/sub&gt;**</td>
</tr>
<tr>
<td>Drug use</td>
<td>1.49</td>
<td>7.67&lt;sub&gt;a&lt;/sub&gt;**</td>
<td>4.15&lt;sub&gt;b&lt;/sub&gt;**</td>
<td>6.59&lt;sub&gt;a&lt;/sub&gt;**</td>
</tr>
<tr>
<td>Marijuana risk perceptions</td>
<td>1.29&lt;sub&gt;a&lt;/sub&gt;**</td>
<td>3.75&lt;sub&gt;b&lt;/sub&gt;**</td>
<td>3.33&lt;sub&gt;c&lt;/sub&gt;**</td>
<td>3.38&lt;sub&gt;b,c,v&lt;/sub&gt;</td>
</tr>
</tbody>
</table>

| Lifetime depression             | 1.56       | 0.85       | 1.57*               | 1.34             |
| Past year depression            | 1.20       | 1.13       | 1.49*               | 1.00             |
| # marijuana use disorder symptoms | 2.55<sub>a</sub>** | 9.80<sub>b</sub>** | 7.61<sub>c</sub>** | 9.76<sub>b</sub>** |
| # alcohol use disorder symptoms | 1.29<sub>a</sub>** | 1.33<sub>a</sub>** | 1.31<sub>a</sub>** | 1.46<sub>b</sub>** |

Note. Non-use is reference group;. AORs with different subscripts in the same row significantly differ at p<0.05. ** p < .001

Marijuana and tobacco co-use

ADJUSTED RISK RATIOS OF EVER MARIJUANA USE PREDICTING TIME-TO-FIRST PAST 30-DAY LCC USE

<table>
<thead>
<tr>
<th>Reference</th>
<th>Hazard Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever marijuana use (baseline)</td>
<td>aIRR = 2.92</td>
</tr>
<tr>
<td>Older adult (25-34) vs. 18-24 yo</td>
<td>aIRR = 4.11</td>
</tr>
<tr>
<td>Black, non-Hispanic v. White</td>
<td>aIRR = 3.52</td>
</tr>
<tr>
<td>Other, non-Hispanic v. White</td>
<td>aIRR = 4.89</td>
</tr>
<tr>
<td>Hispanic v. White</td>
<td></td>
</tr>
<tr>
<td>Female vs. Male</td>
<td></td>
</tr>
<tr>
<td>Past 30-day alcohol use</td>
<td></td>
</tr>
<tr>
<td>Past 30-day cigarette use</td>
<td></td>
</tr>
<tr>
<td>Past 30-day menthol tobacco use</td>
<td></td>
</tr>
</tbody>
</table>

Note. Models control for Wave. Data represent hazard ratios, interpreted as incident rate ratios.
# Marijuana and tobacco co-use

**CUMULATIVE RISK OF PAST 30-DAY CIGAR AND LITTLE CIGAR/CIGARILLO (LCC) USE BY BASELINE EVER MARIJUANA USE**

<table>
<thead>
<tr>
<th>Wave</th>
<th>Never marijuana users</th>
<th>Ever marijuana users</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>3</td>
<td>0.08</td>
<td>0.02</td>
</tr>
<tr>
<td>4</td>
<td>0.10</td>
<td>0.03</td>
</tr>
<tr>
<td>5</td>
<td>0.13</td>
<td>0.03</td>
</tr>
<tr>
<td>6</td>
<td>0.13</td>
<td>0.03</td>
</tr>
<tr>
<td>7</td>
<td>0.13</td>
<td>0.03</td>
</tr>
<tr>
<td>8</td>
<td>0.13</td>
<td>0.04</td>
</tr>
</tbody>
</table>

- Traditional cigars
  - **Never marijuana users**
  - **Ever marijuana users**

- LCCs
  - **Never marijuana users**
  - **Ever marijuana users**
Quiz time???

What is the difference between joints, blunts, and spliffs?

JOINT – only contains cannabis/marijuana
Quiz time???

BLUNT –

• Cannabis rolled in tobacco paper—all or some of the tobacco is removed
• High prevalence among young adults and African-Americans
Quiz time???

SPLIFF –
• Part tobacco part cannabis
But there is more…

Vape pen  Vaporizer  Dabbing
Tinctures  Hookah  Shatter
Tobacco use, mental health, substance use problems in young adults
Tobacco use, mental health, substance use problems in young adults

WEIGHTED PERCENTAGE OF MENTAL HEALTH AND SUBSTANCE USE PROBLEMS IN YOUNG ADULTS AGED 18-24.

SOURCE: Population Assessment of Tobacco and Health Study, Wave 1
Tobacco use, mental health, substance use problems in young adults


SOURCE: National Survey of Drug Use and Health
Tobacco use, mental health, substance use problems in young adults

Prevalence of past-year depression by years between cigarette trial to regular smoking among youth (aged 12-17)

Years to progression from cigarette trial to regular use

SOURCE: National Survey of Drug Use and Health
Tobacco use, mental health, substance use problems in young adults

WEIGHTED PERCENTAGE OF CURRENT ANXIETY AND DEPRESSION BY PAST 30-DAY MENTHOL TOBACCO USE IN YOUNG ADULTS AGED 18-24.

Anxiety
- Menthol tobacco use: 24.9%
- No menthol tobacco use: 13.6%

Depression
- Menthol tobacco use: 22.9%
- No menthol tobacco use: 12.4%

SOURCE: Truth Initiative Young Adult Cohort
Young adult’s myths about tobacco use and co-use with other substances
Myth 1

“Marijuana helps me perform better on a test or a quiz.”
In the short-term (after ingestion) and among chronic users, marijuana can impair memory and attention, cognitive processing, fine motor-movement, and reading comprehension and recall.

Myth 2

“Smoking only a few cigarettes a day, or on occasion when I’m at parties, is OK.”
We call this “social smoking” or “occasional smoking” and it is a problem.

Compared to non-social smokers, social smoking young adults are more likely to:

• Use alcohol and marijuana
• Use cigarettes and alcohol together on the same day
• Less likely to be motivated to quit smoking

Myth 3

“Smoking a blunt is not harmful or addictive because I remove the tobacco from the cigar.”
The wrapper of a blunt is made out of the tobacco leaf, and combusting it (lighting it up) is related to similar, if not worse health problems as smoking a cigarette.

Cigar wrappers contain nicotine, which is addictive.
Myth 4

“Using hookah is not bad for me because I am not “lighting” up tobacco, the shisha is vaporized with water so it’s natural.”
Answer 4

- Smoking hookah/shisha through water does not filter out the harmful cancer-causing chemicals
- In some cases, hookah users are exposed to higher levels of carcinogens than cigarettes because hookah users take longer drags and smoke for hours
- Hookah smoking contains more arsenic, tar, and carbon monoxide than cigarettes
- Not to mention, sharing saliva and germs with others using the same hookah hose
This is what we are up against

Poly-use
Peer pressure
Cigarettes
Exposure
Flavors
Thank you

acohn@truthinitiative.org