Marijuana Use and Mental Health

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History

• 3000 BC: Chinese Emperor Shen Nung
• Ancient Greeks and Romans were also familiar with cannabis.
• 1840’s: Dr. W.B. O’Shaughnessy, a surgeon working for the British East India Company
Marijuana: US Federal Status

US DEA Controlled Substances Act Schedule 1:

- High potential for abuse
- No currently accepted medical use in US (federal level)
Legal status in US states

• Currently, 23 states + DC allow medical marijuana
• 2012: Colorado and Washington legalized recreational marijuana
• 2014: Oregon and Alaska legalized retail sales of marijuana

Public Health approach to rapidly changing legal and social environment
What is Marijuana?

- *Cannabis* (genus) *sativa* (species)
- Primary active ingredient: Delta-9-tetrahydrocannabinol (THC)
- Cannabidiol (CBD): anti-seizure properties
- Additional cannabinoids, unclear effects
- Strains contain differing amts of THC, CBD
- Marinol®: pharmaceutical THC
How used?

- Key components: seeds, stem, flowers, leaves
- Smoked (cigarettes, pipes, water pipes)
- Ingested (cookies, brownies, tea)
- Vaporized, or heated (e-cigs)
- Trans-dermal (lotions, balms, patches)
- Other…
Marijuana Use in Oregon Youth past month

percent

- Oregon 8th grade
- National 8th grade
- Oregon 11th grade
- National 11th grade
Current marijuana use among adults: Oregon and US

- 18-25 years Oregon
- 18-25 years US
- >25 years Oregon
- >25 years US

Oregon Public Health Division
Role for Public Health

• Understand / minimize adverse public health impacts of marijuana use by:
  – Educating public about marijuana-related health issues;
  – Protecting children/ vulnerable populations from accidental exposures/ adverse effects;
  – Preventing youth initiation and use;
  – Minimizing risks of marijuana products on market
  – Monitoring marijuana use, attitudes and health effects.
Retail Marijuana Scientific Advisory Committee

• Develop consensus on strength of evidence for health effects of marijuana in specific populations
  – Pregnant women, newborns, breastfed infants
  – Children, adolescents, adults

• Identify knowledge gaps

• Focus on preventing use by children/vulnerable populations
Adverse Health Effects

• Acute:
  – Diminished psychomotor function; dysphoria, anxiety, paranoia; psychosis
  – Increased heart rate, blood pressure
  – Hyper-emesis

• Chronic:
  – Concerns re: cancer, lung damage, cardiovascular and mental health effects

• Developing brain: infants, youth, teens

• Dependency, withdrawal symptoms
Cognitive effects: Adolescent marijuana use (1)

• Regular marijuana use by adolescents and young adults is associated with impaired learning, memory, math and reading achievement, even 28 days after last use.

• These impairments increase with more frequent marijuana use.
Cognitive effects: Adolescent marijuana use (2)

- Regular marijuana use by adolescents is associated with low academic achievement, such as not graduating from high school.
Adolescent marijuana use and other substance use

- Marijuana use by adolescents and young adults - even occasional use - is associated with adult high-risk use of alcohol, tobacco, and other drugs like cocaine, ecstasy, opioids and methamphetamine.
Psychosis and adolescent marijuana use

- Regular marijuana use by adolescents and young adults is associated with an increased rate of psychotic symptoms and disorders such as schizophrenia in adulthood.
  - This risk is increased among those who start using marijuana at a younger age.
  - This risk is increased with more frequent marijuana use.
Depression, anxiety, suicidal thoughts, and adolescent marijuana use

• There is conflicting research for whether or not marijuana use by adolescents and young adults is associated with depression, anxiety or suicidal thoughts.
Public Health Approach to Marijuana Use

• Precautionary principle
  ▪ When human activities may lead to morally unacceptable harm that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm.
  ▪ Morally unacceptable harm refers to harm to humans or the environment that is:
    - threatening to human life or health, or
    - serious and effectively irreversible, or
    - inequitable to present or future generations, or
    - imposed without adequate consideration of the human rights of those affected.
Public Messages for Youth (1)

• When you get high, you may have difficulty learning, memory issues and lower math and reading scores.

• The more you get high, the harder it may be to learn.
Public Messages for Youth (2)

• Brain development is not complete until your twenties.

• For the best chance to reach your full potential, you should not use marijuana to get high while you are young.
Public Messages for Youth (3)

- Most youth in Oregon do not use marijuana.
- Being high will impair your ability to drive, play sports, play video games, bike or do other activities.
- Getting high can get in the way of achieving your goals.
Questions?
References

• Colorado Department of Public Health & Environment. Monitoring marijuana-related health effects. See:
  https://www.colorado.gov/pacific/cdphe/monitoring-marijuana-related-health-effects

• RAND Corporation. Considering marijuana legalization. 2015. See:
  http://www.rand.org/content/dam/rand/pubs/research_reports/RR800/RR864/RAND_RR864.pdf

• Institutes of Medicine. Marijuana and Medicine: Assessing the science base. See:
Terms and Definitions (1)

• DEFINITIONS
  – From Colorado Report Review Article 2014

Levels of marijuana use
• Heavy marijuana use = daily or near daily (5-7 days/week)
• Regular marijuana use = weekly (1-4 days/week)
• Occasional marijuana use = less than weekly
• Acute marijuana use = used within the last hour
• Any level of use = evidence for all of the above

• Age groups
• Young adult = 18 through 24 years of age
• Adult = 25 through 64 years of age
• Older adult = 65 years of age or older
Terms and Definitions (2)

- DEFINITIONS
  - From Colorado Report Review Article 2014

- **Substantial evidence** indicates robust scientific findings that support the outcome and no credible opposing scientific evidence. Substantial was defined as any of the following:
  - At least one high quality finding, plus supporting findings, with no opposing findings
  - At least three medium quality findings, with no opposing findings
  - Many high quality findings that heavily outnumber opposing findings
  - At least two high quality findings from systematic reviews or meta-analyses published within the past 10 years
Terms and Definitions (3)

- **DEFINITIONS**
  - From Colorado Report Review Article 2014

  - **Moderate evidence** indicates that scientific findings support the outcome, but these findings have some limitations. Moderate was defined as any of the following:
    - A single high quality finding only, with no opposing findings
    - At least one medium quality finding, plus supporting findings with no opposing findings; supporting findings can include animal studies
    - Mixed findings, heavily favoring one conclusion (opposing findings must be low quality)
    - Many medium quality findings that heavily outnumber opposing findings
    - A single high quality finding from a systematic review or meta-analysis published within the past 10 years
Terms and Definitions (4)

- DEFINITIONS
  - From Colorado Report Review Article 2014

- **Limited evidence** indicates modest scientific findings that support the outcome, but these findings have significant limitations. Limited was defined as any of the following:
  - A single medium quality finding only
  - Two or more low quality findings in agreement
  - One low quality finding supported by animal studies
  - Mixed findings, most favoring one conclusion
Terms and Definitions (5)

• **DEFINITIONS**
  – From Colorado Report Review Article 2014

• **Mixed evidence** indicates both supporting and opposing scientific findings for the outcome with neither direction dominating. Mixed was defined as any of the following:
  • Mixed findings, with neither direction dominating
  • Mixed findings, with a medium or high quality study on each side

• **Insufficient evidence** indicates that the outcome has not been sufficiently studied. Insufficient was defined as the following
  • A single low quality finding or less
  • The relevant parameters to be examined have not been adequately defined or established
Terms and Definitions (6)

- **Bias** is defined as any tendency which prevents unprejudiced consideration of a question.

- In research, *bias* occurs when “systematic error [is] introduced into sampling or testing by selecting or encouraging one outcome or answer over others”.
Terms and Definitions (7)

- UNESCO
  - The United Nations Educational, Scientific and Cultural Organization