



Trauma Gender Substance Use

Sex, Gender and Cannabis

The cannabis policy landscape is rapidly changing. In Canada, legalization of cannabis for recreational use is forthcoming, and medical use of cannabis has been available since 2001. In the USA, 28 states have legalized medical cannabis use, and by 2017 eight states plus the District of Columbia had legalized recreational use.

Use of cannabis has grown among both women and men, and perceptions of risk have decreased [1]. There is also evidence that the gender gap in cannabis use is narrowing among adolescents [2]. Given changes in legislation and the increasing popularity of cannabis, there is need for continued research on how women and men and girls and boys are differentially impacted by policies, as well as sex and gender differences in patterns and effects of use.

Research on cannabis use and its effects is growing; emerging evidence suggests sex- and gender- related differences in cannabis use and health effects. For example:

- Men are more likely to use cannabis; In Canada, past year prevalence of cannabis use is nearly double among males compared to females (13.9% vs. 7.4%) [3].
- There are sex differences in the metabolism of cannabis, due to differences in muscle mass and fat distribution
- Females transition from initiation to regular use faster than males (similar to other substances)
- Men who use cannabis are more likely to report dependence or severe dependence on cannabis than women
- Male and female users report differences in forms of ingestion, effects and withdrawal symptoms
- The evidence regarding cannabis use and mental health is mixed; some studies report that depressive symptoms are greater among males, while other studies report an association with depression and anxiety only for females.
- Cannabis use has been associated with decreased pain sensitivity in men, but not in women

- There are differences in neurological effects of cannabis use; use has been associated with decreased brain reactivity to dopamine stimulation in females but not in males.
- The evidence regarding the effects of cannabis use during preconception, pregnancy and parenting is mixed; while some evidence suggests use is less harmful than tobacco or alcohol, other evidence suggests negative effects on sperm health, markers of female fertility, and fetal health.
- There are no published interventions specifically addressing cannabis use during preconception and pregnancy.

While cannabis research on sex and gender differences is expanding, gaps in the evidence remain. A recent systematic review on the health effects and therapeutic benefits of cannabis prepared by the National Academies of Sciences, Engineering and Medicine (2017) provides limited sex and gender analysis of effects; this is largely reflective of the gender-blind nature of the evidence.

Basic science research on cannabis continues to focus on the male sex, typically including only male animals in preclinical research and male subjects in clinical research; and studies that do include females often fail to conduct a sex-based analysis [4]. Further research examining sex- and gender- differences associated with cannabis use and its effects is critical to inform cannabis policy, understand implications for medical use, and develop effective interventions at all levels (harm reduction, prevention and treatment).

The Trauma/Gender/Substance Use project will guide the further integration of trauma informed, gender informed and gender transformative practices into substance use prevention, health promotion, treatment, harm reduction and policy in Canada in 2017-18.

References

1. Rahim-Juwel, R., et al., *Are gender differences in the prevalence of past-year marijuana use and risk perception in the U.S. narrowing from 2002 to 2013?* Drug & Alcohol Dependence, 2017. 171: p. e172.
2. Johnson, R.M., et al., *Past 15-year trends in adolescent marijuana use: Differences by race/ethnicity and sex.* Drug and alcohol dependence, 2015. 155: p. 8-15.
3. Statistics Canada, *Canadian Tobacco, Alcohol and Drugs Survey (CTADS)*. 2013, Statistics Canada: Ottawa, ON.
4. Rubino, T. and D. Parolaro, *Sex-Dependent Vulnerability to Cannabis Abuse in Adolescence.* Frontiers in Psychiatry, 2015. 6: p. 56.
5. Cooper, Z.D. and M. Haney, *Sex-dependent effects of cannabis-induced analgesia.* Drug and Alcohol Dependence, 2016. 167: p. 112-120.
6. Danielsson, A.-K., et al., *Cannabis use and psychological distress: An 8-year prospective population-based study among Swedish men and women.* Addictive Behaviors, 2016. 59: p. 18-23.
7. Grunberg, V.A., et al., *Can marijuana make it better? Prospective effects of marijuana and temperament on risk for anxiety and depression.* Psychology of addictive behaviors: journal of the Society of Psychologists in Addictive Behaviors, 2015. 29(3): p. 590-602.
8. National Academies of Sciences, Engineering and Medicine, *The health effects of cannabis and cannabinoids: The current state of evidence and recommendations for research.* 2017, The National Academies Press: Washington, DC.
9. Sherman, B.J., et al., *Gender differences among treatment-seeking adults with cannabis use disorder: Clinical profiles of women and men enrolled in the achieving cannabis cessation—evaluating N-acetylcysteine treatment (ACCENT) study.* The American journal on addictions, 2017. 26(2): p. 136-144.
10. van Gastel, W.A., et al., *Cannabis Use is a Better Indicator of Poor Mental Health in Women Than in Men: A Cross-Sectional Study in Young Adults from the General Population.* Community Mental Health Journal, 2014. 50(7): p. 823-830.
11. Wiers, C.E., et al., *Cannabis abusers show hypofrontality and blunted brain responses to a stimulant challenge in females but not in males.* Neuropsychopharmacology, 2016.