



Cannabis education: how providers and patients can engage in discussion

Kenneth Finn^{1,2} · Brock K. Bakewell³

Received: 26 April 2023 / Accepted: 7 June 2023

© The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature 2023

Keywords Cannabis · Shared decision-making · Education · Cannabinoids

Dear Editor,

Cannabis use for both medical and recreational purposes has risen over the last decade, nearly doubling in the US alone from 2010 to 2020. The World Health Organization estimates that roughly 2.5% of the world's population uses cannabis, while the age of initiating use has decreased [1]. The use of cannabis has dramatically accelerated ahead of research for use and efficacy. Research efforts globally have risen with the increasing demand for cannabis, but many unknowns still exist today.

The many known health risks surrounding cannabis use makes provider and patient education critical. Cannabis must be treated like any other centrally acting substance, regardless of whether it is used medically or recreationally. Providers are given little to no education on cannabis, and there is much misinformation for patients and consumers. Providers should approach patients with a shared decision-making mentality, working with them to help manage expectations and outcomes of cannabis use.

The growing amount of knowledge surrounding cannabis has identified adverse effects of cannabis that should be brought to patients' attention. We strongly encourage medical providers to recommend caution in persons using cannabis with the following health history:

1. **Cardiac:** a history of myocardial infarction, coronary artery stunting, history of cardiac arrhythmia, and acute coronary syndrome. The American Heart Association and other rigorous scientific studies have demonstrated significant adverse cardiac and cardiovascular effects [2].
2. **Pulmonary:** a history of asthma, chronic obstructive pulmonary disease, airway inflammation, chronic bronchitis, emphysema, pneumothorax, oxygen dependence, or allergy to cannabis. Cannabinoids may have a negative impact on pulmonary function. The link to lung cancer is currently unproven. However, cannabis smoke is known to have similar carcinogens to tobacco smoke.
3. **Neurological:** history of stroke, transient ischemic attack or other neurovascular diseases, traumatic brain injury, cognitive deficits, or cognitive decline. Cannabinoids may impair memory, cognition, and balance and diminish Intelligence Quotient. They also have demonstrated impacts on the cerebrovascular system.
4. **Psychiatric:** history of depression, psychosis, panic disorder, suicide attempt, bipolar disorder. Cannabinoids have been shown to increase the risk of suicide and have the highest conversion rate to psychosis and bipolar disorders, compared to other substances. Given the increase in potency over recent years, addiction rates are around 30%, compared to older data. Hemp-based isomers carry the same risks. There is a link to violence in chronic cannabis use [3, 4].
5. **Pregnancy:** avoid use during pregnancy and lactation, following the American College of Obstetrics and Gynecology and American Academy of Pediatrics. Cannabinoids have been shown to impact the developing brain negatively, and emerging data note problems with social behavior, attention, and other neurological problems in children exposed in utero. There is some data to suggest a link to some pediatric cancers [5, 6].

✉ Kenneth Finn
kfinn@springsrehab.net

Brock K. Bakewell
Brock.Bakewell@ut.rvu.edu

¹ Springs Rehabilitation, P.C., 2955 Professional Place, Suite 201, Colorado Springs, CO 80904, USA

² International Academy on the Science and Impact of Cannabis, Leesburg, VA, USA

³ Rocky Vista University College of Osteopathic Medicine, Irvins, UT, USA

6. Adolescent use: recommend delaying the onset of use until at least age 25. Cannabinoids impact the developing brain negatively and may increase the risk of addiction, depression, suicide, and other problematic behaviors [7].
 7. Use in the elderly: Elderly patients may be at risk for falling, sustaining an injury, and commonly taking multiple prescription medications. Elderly patients may have problems with cognition, memory, and balance, and the addition of cannabinoids may exacerbate these problems. Recent data has shown a significant rise in elderly patients presenting to the Emergency Room regarding their cannabis use.
 8. Drug interactions: recommend a discussion with the patient and pharmacist due to the hundreds of known drug interactions, some of which can be life-threatening. Cannabinoids are metabolized via the liver's cytochrome pathways which could have significant adverse health consequences due to drug-drug interactions.
 9. Driving: avoid using cannabinoids due to the increased crash risk or fatality. Cannabinoids have been proven to slow reaction time and impact depth perception. They are also known to cause sedation, which may increase a person's risk of being involved in a car crash.
10. Perioperative use: avoid use in the preoperative period due to known risks and interactions with anesthetic agents. Evidence suggests a higher risk of postoperative myocardial infarction, higher postoperative opioid use, and higher hospital costs. It would be essential to discuss with the surgeon and anesthesiologist on cannabis use in pre-surgical planning [5].

With cannabis use and state programs expanding, providers must caution patients about the risks associated with use, similar to other substances, such as tobacco and alcohol. **This is to approximate a standard of care expected of traditional medicine, which may reduce or avoid criminal or civil litigation against medical providers.** Providers and patients need readily available resources to help highlight the risks of initiating or continuing their cannabis use. Cannabis will continue to expand both in the United States as well as internationally; as it does, more patients will present to clinics with questions about cannabis use for their medical conditions as well as their recreational habits. Patients should be screened explicitly for their cannabis use for the aforementioned concerns. The attached education form is designed to give providers a tool for navigating this complex and ever-changing space and standardizing the care and management of cannabis use in the healthcare setting.

Kind regards,

Kenneth Finn, MD
Brock Bakewell, MPH

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s00414-023-03041-x>.

Author contribution In regard to the authors, all the co-authors qualify for authorship based on the ICMJE criteria for authorship. Specifically, all the authors were involved in the drafting of this manuscript. Moreover, all the co-authors participated in: (1) The manuscript's intellectual content, analysis of the data, and participating in its writing. (2) The manuscript's review of the final version, approved its publication, and certified the accuracy and integrity of the final product. (3) The certification stated that the manuscript neither has been published elsewhere nor has any rights to a third party.

Funding Research reported in this manuscript was supported by the International Academy on the Science and Impact of Cannabis. The content is solely the responsibility of the authors and does not necessarily represent the official views of the International Academy on the Science and Impact of Cannabis.

Data availability Not applicable.

Declarations

Ethics approval/consent Not applicable.

Consent for publication Not applicable.

Competing interests The authors declare no competing interests.

References

1. World Health Organization. Cannabis. <https://www.who.int/teams/mental-health-and-substance-use/alcohol-drugs-and-addictive-behaviours/drugs-psychoactive/cannabis>. Accessed 28 Jan 2023
2. Page R, Allen L, Kloner R, Carriker C, Martel C, Morris A et al (2020) Medical marijuana, recreational cannabis, and cardiovascular health: a scientific statement from the American Heart Association. *Circulation* 142(10):e131–e152
3. Quattrone D, Ferraro L, Tripoli G, La Cascia C, Quigley H, Quattrone A et al (2021) Daily use of high-potency cannabis is associated with more positive symptoms in first-episode psychosis patients: the EU-GEI case-control study. *Psychol Med* 51(8):1329–1337
4. Substance Abuse and Mental Health Services Administration. Center for behavioral health statistics and quality. 2019 national survey on drug use and health: Detailed tables. 2020. <https://www.samhsa.gov/data/report/2019-nsduh-detailed-tables>. Accessed 28 Jan 2023
5. Shah S, Schwenk ES, Sondekoppam RV, Clarke H, Zakowski M, Rzasa-Lynn RS et al (2023) ASRA Pain Medicine consensus guidelines on the management of the perioperative patient on cannabis and cannabinoids. *Reg Anesth Pain Med* 48(3):97–117
6. Committee opinion summary NO. 722: Marijuana use during pregnancy and lactation. *Obstetrics and gynecology* (New York. 1953). 2017;130(4):931–932. <https://www.ncbi.nlm.nih.gov/pubmed/28937569>. <https://doi.org/10.1097/AOG.0000000000002349>
7. Dharmapuri S, Miller K, Klein JD (2020) Marijuana and the pediatric population. *Pediatrics* 146(2):1

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.