# Adopting College Health Clinic EMR Screenings for Cannabis

Written by: Janice Putnam Ph.D. RN; Karen Doyle, Ph.D. & Chylla Waggoner, BS



## ABSTRACT

**Background:** The legalization of cannabis has been a contentious issue, drawing considerable attention as the legal status has changed in numerous states. Studies of shifts in patterns of use, availability of the drug, social acceptability, legal liability, and public health outcomes are crucial to understanding the evolution of the use of cannabis and its impact on our society and citizens. Focus on these is essential to researchers, health care professionals, and policymakers to promote minimizing negative consequences and maximizing benefits. Young adults are especially susceptible to negative outcomes related to cannabis use. Objective: To investigate the impact of cannabis legalization on Missouri college students, we examined three fundamental questions: What percentage of students who see a campus health clinician report cannabis use (medicinal or recreational), and is this congruent with the self-report that students submit anonymously in the Missouri Assessment of College Health Behavior Survey?; What percentage of students who see a clinician admit to using tobacco in conjunction with cannabis?; and, What percentage of students who see a clinician are poly-users of other substances? Design: This study used descriptive statistics to analyze and compare new patient data from the University of Central Missouri Health Center between April and June 2023 to UCM MACHB survey results. Results showed much lower percentages of reported tobacco, alcohol, and substance use compared to statewide and UCM MACHB findings. Discussion: The multifaceted effects of cannabis legalization on the college student population are of significant interest due to the wide array of potential implications. Conclusion: Understanding the influence of cannabis legalization on young adults is essential for promoting overall health. The discrepancy between various sources of self-reported cannabis data highlights the need for continued research.

**KEYWORDS:** electronic medical record, cannabis, marijuana, drug screening, college

## INTRODUCTION

Healthcare administrators expect that new cannabis regulations in Missouri will impact University of Central Missouri (UCM) students' health and the need for UCM substance use prevention programming. Evolving healthcare technologies, such as the electronic medical record, may help clinicians screen and measure the use and impact of cannabis, tobacco, and other substances to provide data-informed substance use prevention programming and cessation services.

## PROGRAM RATIONALE

Despite recent legalization trends, marijuana remains illegal at a federal level under the Controlled Substances Act (CSA) (Sacco, 2022). Cannabis is federally classified as a Schedule 1 drug, meaning there is no currently accepted medical treatment and a high abuse or addiction risk (Sacco, 2022). However, the National Academies of Sciences, Engineering, and Medicine (NASEM) claims that the therapeutic uses of cannabis alleviate chronic pain symptoms in adults (2017). Within the past two decades, twenty states and the District of Columbia have legalized the recreational use of marijuana, while an additional twenty states have decriminalized marijuana-related offenses (Council of State Governments, 2023). Missouri became the twenty-first state to legalize the recreational use of marijuana with the passage of Amendment 3 in November 2022

(Hays, 2022).

The variance between federal and state cannabis regulations carries numerous implications. For instance, the discrepancies between the legal status of cannabis fuels uncertainty and legal liability for those operating within the cannabis industry. Additional legal protection risks, medical advancements, and public health efforts are greatly influenced by the varying regulations between these two sectors of government. While it is crucial for additional research to close the gaps in legislation, barriers such as access to products within one's state, standardizations, and quality control limit the ability to conduct research. One initiative that Congress has passed includes the Medical Marijuana and Cannabidiol Research Expansion Act to further explore research on marijuana and cannabidiol (CBD) (Sacco, 2022). Such research and focused advocacy actions may eliminate the legal and political separation seen between current U.S. federal and state regulations.

Cannabis can have a wide array of health effects on an individual. Many states have favored legalizing this substance due to its medical benefits. Potential health benefits include pain management, reduced inflammation, neurologic and mental disorders, and sleep management. The most common reasons for cannabis use include insomnia, pain management, anxiety, depression, and disease-related concerns (Azcarate et al., 2020). Health consequences of cannabis misuse include impaired senses, body movement, and memory, as well as alterations in mood, hallucinations, paranoia, and breathing problems (NIDA, 2019).

The legalization of cannabis has influenced patterns of cannabis use among young adults. To create substantial intervention and prevention strategies, the relationship between cannabis patterns, prevalence, frequency, and modes of consumption is significant. Cannabis usage is most prevalent in those 18 to 25 years old (CBHSQ, 2020, as cited in National Academies of Sciences, Engineering, and Medicine et al., 2017). As seen in the 2020 Monitoring the Future (MTF) study, cannabis consumption was reported to have reached an all-time high within the last three decades (NIDA, 2021). Compared to 2015, usage among college students has increased from 38% to 44% in 2020 (NIDA, 2021). The various ways in which a person can consume marijuana include smoking joints, pipes, bowls, water pipes, and blunts; vaping; and using topicals (Romm et al., 2021). The modes of consumption were assessed among young adults who reported cannabis usage within the last month include via joint/bowl (54%), vaping (21.8%), pipe/bong (15.1%), and ingesting (9.1%) (Romm et al., 2021).

Such legalization has the potential for increased substance use among young adults with other substances, such as alcohol and illicit substances. The World Health Organization (WHO) defines polydrug use as the combination of drugs being used either at the same time or sequentially (1994). Poly usage can be intentional, such as for recreational purposes, or unintentional by the drug being mixed with other substances, without being informed. Those using cannabis more than 50 times per year have an increased risk of using other illicit drugs (Fergusson & Horwood, 2002). Their associated risk of using illicit drugs is 59.2 times higher than nonusers (Fergusson & Horwood, 2002). In addition to illicit drug use, heavy cannabis users are more subject to drug abuse and dependence; however, risks associated with usage, abuse/dependence, and variety of illicit drug use were shown to decline as age increased (Fergusson et al., 2006; Fergusson & Horwood, 2002). Cannabis may act as a gateway drug and increase the likelihood of a person engaging in other substances.

Considering social and gender factors affecting cannabis use is essential to understanding the impact and implications. While women often partake in substance use at lower levels, the progression to addiction is accelerated (Zakiniaeiz & Poteza, 2018). This is known as the phenomenon of telescoping. Especially in alcohol, cannabis, and opioid research, the rapid transition from initial use to dependence is seen to affect more women than men (Zakiniaeiz & Poteza, 2018). No gender differences we reported in terms of which males and females experienced heavy cannabis usage, age at onset cannabis usage disorder (CUD), cannabis abuse or dependence, or in the number of criteria met for CUD (Khan et al., 2013, as cited in Greaves & Hemsing, 2020).

Mental health and cannabis use are areas of evolving research and discussion. According to the Centers for Disease Control and Prevention (CDC), young adults are more likely to use drugs if they are involved in risky sexual behavior, violence, or suffer from mental issues (Centers for Disease Control and Prevention, 2022). Since a person's brain continues to develop until age 25, cannabis use at an early age may hinder neurological development (CDC, 2021). Research conducted by Buckner and colleagues (2010)

illustrated that marijuana use is often associated with various forms of psychological distress in college students (as cited in Wallis et al., 2017). Twenty percent of university students engaging in cannabis use are projected to develop CUD (Daneshmend et al., 2022). Substance use disorders can contribute to mental illness. Individuals who reported using cannabis within the last 30 days were more likely to experience suicidal ideation and depressive symptoms (Daneshmend et al., 2022). Such research suggests a bidirectional relationship between cannabis usage and depressive symptoms, which can lead to suicidal ideation (Daneshmend et al., 2022). Thus, suicidal thoughts can be a predictor of cannabis use, and vice versa (Daneshmend et al., 2022). Moreover, suicidal thoughts and behaviors have been linked to other substance use including alcohol, anxiolytics/sedatives, and opioids (Daneshmend et al., 2022). The cannabis-suicide ideation link has not been explored exclusively.

The relationship between cannabis use and academic well-being is complex and multifaceted. Especially for females, higher dropout rates and lower educational attainment is associated with early cannabis initiation (Melchior et al., 2017; Nguyen et al., 2020). Additionally, younger users have a lower baseline of cognitive skills which is seen to increase the risk of academic failure and lower educational attainment (Melchior et al., 2017). While previous studies have linked marijuana usage to poor academic performance, contrasting evidence as well as a lack of investigating usage frequency during one's college career make this relationship difficult to define. Mechanisms for

decreased academic performance in relation to regular or heavy cannabis usage include decreased motivation, memory impairments, and high-risk behaviors (Melchior et al., 2017). However, other research highlights the complexity of this relationship, by stating cannabis is not the sole determinant of academic success or failure. Other factors influencing this include age, socioeconomic status, demographic characteristics, perceived social norms, student involvement, and use of other substances (Borcherding, 2016; White et al., 2019).

Effective intervention and prevention strategies targeted toward cannabis usage in young adults are crucial to promoting healthier behaviors and managing possible consequences. According to the 2022 Missouri Assessment of College Health Behaviors (MACHB), 26% of students who report using cannabis have intentions of changing use (thoughts, using less often, or quitting) (Partners in Prevention, 2022). While 16% of students report traveling to another state to purchase cannabis, 54% of students said that they would not start using cannabis if it was legalized for recreational use (Partners in Prevention, 2022). Since these findings were published in 2022, this does not account for possible shifts in the perception of cannabis post-legalization. Monitoring health behaviors in college students is critical to prevention strategies. Nonetheless, the future findings in this annual study will illustrate how legalization has impacted usage among college students.

Gaps in cannabis documentation pose challenges to clinical care. Self-reported surveys, drug screening and analyses, and medical records are the most common ways that

cannabis usage is documented. A significant advantage of using self-reported surveys is the outreach, flexibility, and cost-effective design. Yet, drug screenings are considered to be the most reliable form of documentation due to objective measures and scientific validity. However, electronic medical records (EMR), continue to drive "epidemiological studies, drug safety surveillance, clinical trials, and healthcare audits" (Ford et al., 2016). Despite that, underreporting or non-disclosure, lack of standardized terminology, varying documentation methods, and limited data fields illustrate inconsistencies within the documentation of cannabis in medical records. Furthermore, the inclusion of unstructured clinical notes within a patient's file exemplifies another varying form of documentation (Ni et al., 2021). While it is feasible for a self-reported survey to be anonymous, drug screenings and medical records are typically confidential. These forms of documentation are reliant on participant honesty and willingness to disclose the requested information.

Despite the strict privacy regulations for all of these forms of documentation, there are no formal regulations on how reporting should be conducted (Soos et al., 2023). Without clear guidelines establishing regulations for cannabis documentation, there are inconsistencies within the measures of documentation. Thus, these differences directly impact the level of prevention, intervention, and treatment strategies that are available, especially on a clinical level. With newly passed legislation, Missouri will establish adult-use cannabis regulations. This clarity will be a starting point for potential

documentation regulations.

Shortcomings of earlier studies exploring the impact of cannabis usage following legalization efforts include a lack of exclusive longitudinal research, funding, and awareness. Evolving social acceptability following cannabis legalization as well as various means of documentation are additional limitations of cannabis research available at this time. Moreover, while several states have legalized cannabis, federal illegality triumphs the ability to create and conduct research efforts that would expand the existing understanding. Viable treatment options, prescription of effective treatments, and development of evidence-based policies are impacted by research. The presence of such barriers illustrates a public health problem.

## ORGANIZATIONAL SETTING

Due to the risk of losing federal funding, organizations such as universities have established regulations for medicinal and adult-use cannabis to reflect that of federal regulation against cannabis use as opposed to state regulation supporting the choice to use (Johnson, n.d.). This is currently the case at the University of Central Missouri, a mid-sized midwestern university with approximately 150 degree programs. The development and effectiveness of campus policies align with previous policies about substance use. There are various resources available to students struggling with substance use such as on-campus counseling, drug screening, and online promotion courses. Despite this, there is a lack of programming designed to specifically target cannabis users.

## PURPOSE

The purpose of this study is to identify how the electronic medical record may be used to screen for cannabis usage and health outcomes. These results are important to strategically planning UCM substance use prevention programming and cessation services.

**Theoretical Model:** Bronfenbrenner's Ecological Theory and Comprehensive Prevention are the conceptual frameworks of this study.

**Research Questions:** This study is designed to answer three research questions.

1. What percentage of students report cannabis use (medicinal or recreational), and is this congruent with the self-report that students submit in the Missouri Assessment of College Health Behavior Survey?
2. What percentage of students are using tobacco in conjunction with cannabis?
3. What percentage of students are poly-users of other substances?

## DESIGN AND IMPLEMENTATION

**Design:** This study is a quantitative study using aggregate data pulled from the electronic medical record to answer epidemiologic research questions. A descriptive empirical analysis design will be used.

## SAMPLE AND PROCEDURES

**Population:** The total population in this study is all electronic medical records documenting college-aged students' clinician visits at the UCM Health Center.

**Sample:** The sample includes all electronic medical records of the students who met with a clinician in the UCM Campus Health Center between April 2023 and June 2023. The sample size is 130 patient

charts. Charts selected for the query excluded patients under the age of eighteen, and primarily consisted of new patients seen at the health center. The data is pulled from a self-reported questionnaire answered by the patient before arriving at the health center. IRB approval was obtained.

**Procedure:** Medicat© is the electronic medical record (EMR) system that UCM Campus and Community Health uses. This system is used by the clinician to record patient cannabis, tobacco, and other substance usage. To collect data on cannabis usage among college-aged students, cannabis usage fields were added to the electronic medical record system by the UCM Health Center in April. Aggregate data queried by the Health Center in June was stored on a password-protected computer and descriptively analyzed.

**Analysis Plan:** The electronic medical records were queried for predetermined fields and de-identified. Fields queried include the demographics (sex, age, ethnicity, UCM undergraduate/graduate level, and under 21 students). Fields specific to cannabis, tobacco, and other substance use screening were included to identify usage prevalence. Office Excel was the software used for data analysis. In addition to descriptive statistics, usage data was compared to the 2022 and 2023 UCM Missouri Assessment of College Health Behavior Survey to identify the differences between these approaches in reporting cannabis use.

## OUTCOMES

The queried data included 130 patient cases (57% female, 42% male, 1% not specified) between the ages of 19 and 34 years (mean

**TABLE 1:** Student Self-reported Cannabis and Polysubstance Use Within the Last 12 Months

| Data Source | UCM Health Center | 2023 UCM MACHB | 2022 UCM MACHB |
|---|---|---|---|
| **Substance Use** | | | |
| Cannabis | 4.2% | 25.3% | 23% |
| Tobacco/Nicotine in Cannabis Users | 31% | 33% | 31% |
| Alcohol in Cannabis Users | 70% | 54% | 46% |

age = 23.3 years, SD = 3.76). Of the participants, the majority (66%) did not indicate their ethnicity, while 32% identified as non-Hispanic or non-Latino, and 2% identified as Hispanic or Latino. A substantial number of the participants (58%) were graduates, while 11% were seniors, 11% were juniors, 12% were sophomores, and 8% were freshmen. When asked about the use of recreational drugs, 10% confirmed their usage. Nearly half, 6 out of 13, individuals admittedly using recreational drugs specified using marijuana. Furthermore, 31% of those using recreational drugs also use cigarettes or tobacco/nicotine and while 70% consume alcohol occasionally. Merely 2% of the participants reported using multiple substances and would be considered poly-users.

## DISCUSSION

The interpretation of these findings sheds light on the impact of cannabis legalization on self-reported cannabis usage among college-aged students. Knowing how policy changes are influencing student behaviors and trends is essential to understanding future implications such as public health, education and programming, and future legislation efforts.

The comparison between the data queried from the UCM health center and 2022 and 2023 UCM MACHB surveys reveals insightful differences. While the ethnicity of the queried data was limited, the 2022 and 2023 UCM MACHB provided a comprehensive representation of the student population. In the 2023 UCM MACHB survey, the majority of respondents, accounting for 70%, identified as Caucasian. Meanwhile, 19% of respondents identified as Asian, 4.6% as African American, 5.3% as Hispanic or Latino, and 15.5% as belonging to other ethnic backgrounds. Additionally, 58% identified as female, and 41% identified as male. The table above illustrates the comparisons between cannabis and polysubstance use documentation. *(Table 1)*

Student Self-reported Cannabis and Polysubstance Use Within the Last 12 Months Cannabis usage queried from the UCM health data was only one-six of the prevalence of the 2022 and 2023 UCM MACHB surveys. There are several possible reasons why there are varying ranges of substance use. First, an individual could be subject to under/over-reporting due to memory recall, fear of judgment, or misinterpretation of the question. While the MACHB survey is anonymous, the pre-clinic questionnaire at the health center is confidential. Whereas the MACHB survey is designed to help campus prevention coalitions target certain college behaviors, healthcare providers use patient-reported medical history to during the appointment to guide personalized and effective medical care and treatment decisions. Indicating substance use could lead to uncomfortable conversations about intervention and treatment strategies between the healthcare provider and patient. Therefore, choosing not to disclose this information makes this scenario less likely. The sample sizes of these data sets are different. While the sample size for this study was 130, the 2022 UCM MACHB survey consisted of 448 students and the 2023 UCM MACHB survey consisted of 302 students. The differences in sample size matter because of the study's statistical power, generalizability, and validity of the findings. Social acceptability is not static and can influence the accuracy of reporting. For instance, the social acceptability between alcohol and cannabis is different. The legal status, cultural norms, and perception of harm can vary, especially over time. Historically, more students report consuming alcohol over using cannabis or tobacco/nicotine. This raises the question of is one substance being reported more than the other because it has been normalized throughout society or if there are truly fewer people using it.

There are also legal issues associated with self-reporting substance usage. If a person is underage, they are less likely to disclose substance usage due to legal risks. Twenty-three percent of the patients in the queried data were under the age of 21. That said, 37% of those individuals reported substance use. Five out of the six minors who reported cannabis use were female. As seen in previous literature, men are more likely than women to use substances; however, women are more likely than men to experience a quicker journey to addiction (Zakiniaeiz & Poteza, 2018). While this trend is not significant enough to make any rash generalizations, it is important to be aware of it.

The implications of these results are substantial for policymakers, educators, campus prevention coalitions, and public health professionals. Not only are young adults more susceptible to addiction compared to other age groups, but they are also the future of the world. It is crucial to investigate student behaviors to comprehend the effects of cannabis legalization. If not given proper resources, this could go on to create systemic problems that last for generations. Addressing these issues now is significant to establish the next steps.

There are a few limitations to this study. First, this data relies on self-reports of drug usage. This data collection method does not always produce accurate data as it relies on an individual›s honesty and willingness to self-disclose. Second, the sample size of the study was 130 patients. Compared to UCM's total student population of 10,000, the sample is 1.3% of the student population. Therefore, the findings cannot be generalized in confidence as this may not be a true representation of all students at UCM. The data queried from the health center consisted of new patient charts during primarily summer months. Consequently, this data does not accurately depict behaviors by established patients or those who did not go to the campus health center during the summer. As classes end in early May, the majority of students spend their time away from campus. Additionally, factors such as coverage restrictions, perception of quality, and specialized care may prevent students from seeking treatment at a campus health center. Further, the majority (58%) of this sample consisted of graduate students. UCM has continued to appeal to international students by offering competitive science and technology degrees. In light of this, the health center may see more international students for health screenings, health insurance information, health education, in addition to numerous other resources available to them. The shift in culture could impact how cannabis legalization affects the student population.

As far as future research, many different paths could be explored. First, there is a lack of longitudinal cannabis research. While expenses have been a significant barrier to this, understanding the long-term effects of cannabis on a specific location is crucial. Second, exploring cannabis-related gender effects, as well as in-depth demographics could be beneficial to create targeted prevention and treatment resources. Next, studying younger populations and observing their attitudes towards cannabis as they age into young adults could support social acceptability changes.

## CONCLUSION

It is important to monitor student behavior, especially following legalization trends. Not only does this paint a picture of how students are behaving in response to policy changes, but it also provides a benchmark for future research. While many states have changed the legal status of cannabis, the effects of this are still unfolding. Thus, the importance of continuing research remains. Key findings from the queried data illustrate lower percentages of tobacco/nicotine, alcohol, and cannabis use. While the primary study was targeted to focus on cannabis use, it is equally important to observe additional substance usage. The level of variance between this data and the MACHB survey warrants additional research. There was a slight increase (23% to 25.3%) in cannabis usage between the 2022 and 2023 UCM MACHB survey. During this time frame, it is important to note that cannabis was legalized. However, student cannabis usage reported by the health center was only one-sixth of the student cannabis usage documented by the UCM MACHB. Factors such as reporting bias, perceived consequences, changes in the cannabis landscape, and timing of data collection may influence the potential of the findings and warrant further study.

*References*

Azcarate, P. M., Zhang, A. J., Keyhani, S., Steigerwald, S., Ishida, J. H., & Cohen, B. E. (2020). Medical reasons for marijuana use, forms of use, and patient perception of physician attitudes among the US population. *Journal of General Internal Medicine, 35*(7), 1979–1986. *https://doi.org/10.1007/s11606-020-05800-7*

Borcherding, M. (2016). *Marijuana use among community college students: A study of academic and social involvement* [Doctoral dissertation, St. Cloud State University]. Repository at St. Cloud State. *https://repository.stcloudstate.edu/cgi/viewcontent.cgi?article=1005&context=hied_etds*

Centers for Disease Control and Prevention. (2021). *Marijuana and public health effects: Teens. https://www.cdc.gov/marijuana/health-effects/teens.html*

Centers for Disease Control and Prevention. (2022). *High-risk substance use in youth. https://www.cdc.gov/healthyyouth/substance-use/index.htm*