

CLINICAL PRACTICE

Clinical insights on Kratom and Delta-8-THC: Case study

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ABSTRACT

The rising use of Kratom and Delta-8-tetrahydrocannabinol (Delta-8-THC) poses new challenges for advanced practice registered nurses (APRNs). This article explores the increasing prevalence of these substances, driven by limited federal regulation and inconsistent state laws, which lead to their widespread availability and appeal to vulnerable populations. Kratom, from the *Mitragyna speciosa* tree, contains psychoactive compounds that mimic opioids and affect various neurotransmitter systems. Delta-8-THC, a milder cannabinoid from hemp or cannabis, remains unregulated and raises safety concerns. This review covers their pharmacological profiles, potential for abuse, and clinical implications, including a case study of Kris T., a 16-year-old gender nonconforming individual, highlighting dependence, withdrawal, and cognitive issues. APRNs need to understand these substances' dual actions and abuse potential, emphasizing evidence-based screening, individualized treatments, and advocacy for regulation to ensure safety and efficacy.

Key Words: Kratom, Delta-8-THC, Psychoactive substances, Pharmacological profiles, Clinical implications, Gender identity

1. INTRODUCTION

The landscape of substance use and addiction is continually evolving with the emergence of new psychoactive substances. Two such substances that have gained significant attention in recent years are Kratom and Delta-8-tetrahydrocannabinol (Delta-8-THC). These compounds present unique challenges and opportunities for APRNs and other clinicians. Although current prevalence of use estimates of Kratom and Delta-8-THC remain largely unclear, there is general agreement that US sales have surged in recent years.^[1,2] This surge in sales is fueled by limited federal regulatory oversight coupled with conflicting state laws that lend to unfettered access to unapproved products often making unsubstantiated therapeutic claims while being marketed towards vulnerable populations such as children and adolescents.^[3] With the US Drug Enforcement Agency (DEA) and Food and

Drug Administration (FDA) both identifying Kratom^[4] and Delta-8-THC^[1] as drugs of concern, it is important to bring more attention to stakeholders including healthcare providers and product consumers. This article provides a comprehensive overview of Kratom and Delta-8-THC, highlights their pharmacological profiles, potential for abuse, and therapeutic implications, and presents a case study illustrating the clinical complexities associated with these substances.

2. PHARMACOLOGIC PROFILES AND MECHANISMS OF ACTION

2.1 Kratom (*Mitragyna speciosa*)

Kratom is a tropical tree indigenous to Southeast Asia, with leaves containing psychoactive compounds. The primary active constituents, mitragynine and 7-hydroxymitragynine,

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exhibit partial agonist activity at the mu-opioid receptors, similar to traditional opioids. Kratom also interacts with adrenergic, serotonergic, and dopaminergic systems, contributing to its complex pharmacological effects.^[5] Recent studies have shown that Kratom acts as a stimulant at lower doses and a sedative at higher doses, increasing its potential for misuse and dependency.^[6]

2.2 Delta-8-THC

Delta-8-THC is a cannabinoid derived from hemp or cannabis plants, closely related to Delta-9-THC. It binds to the CB1 and CB2 receptors of the endocannabinoid system with less affinity than Delta-9-THC, resulting in milder psychoactive effects.^[7] Delta-8-THC has been reported to provide anxiolytic, antiemetic, and appetite-stimulating effects, albeit with a lower risk of paranoia and anxiety often associated with Delta-9-THC. However, its unregulated status raises significant concerns regarding product purity and potency.^[8]

2.3 Potential for abuse and clinical concerns

2.3.1 Kratom

The use of Kratom has surged in the United States, driven by its accessibility and perception as a natural, safe alternative to opioids. Despite anecdotal reports of its efficacy in managing pain, anxiety, and opioid withdrawal symptoms, Kratom use is not without risks. Adverse effects include gastrointestinal disturbances, hepatotoxicity, seizures, and psychosis, particularly at high doses or with long-term use.^[9] The potential for dependence and withdrawal symptoms akin to opioid withdrawal is a significant concern, necessitating careful assessment and monitoring by clinicians.^[10] Additionally, the variability in the alkaloid content of Kratom products can lead to unpredictable effects and risks.^[11]

Although Kratom use first showed an increase in 2007, the rapid expansion of available Kratom products has fueled continued increases in use since at least 2015,^[12] leading to hundreds of fatalities in an unregulated U.S. trade market.^[1] Compounding the problems with Kratom abuse is co-occurring use of other substances, including a positive correlation with Opioid Use Disorder. In addition, increased usage has been observed in persons abusing cannabis, cocaine, and stimulants.^[4] Survey data of persons indicating use of Kratom demonstrates Kratom Use Disorder rates ranging from 12 to 29.5%.^[13]

2.3.2 Delta-8-THC

Delta-8-THC's rise in popularity stems from its legal status in many states due to its derivation from hemp, positioning it within a legal grey area following the 2018 Farm Bill. However, the lack of regulation and oversight raises sig-

nificant safety concerns. Adverse effects such as altered mental status, motor impairment, and cardiovascular issues have been reported.^[7] The variable potency and presence of contaminants in unregulated Delta-8-THC products further complicates its safety profile, underscoring the need for comprehensive regulatory frameworks and clinical vigilance.^[14]

From January to July 2021, the national poison control centers received hundreds of exposure incident reports with 39% involving children, and pediatric patients also accounted for 77% of unintentional exposures. As a result, 18% of those affected, including some children, required intensive care admissions to hospitals.^[3] Adding to the dilemma is concurrent substance abuse, where 17% of cannabis users also consume Delta-8-THC products.^[15]

3. CASE STUDY

3.1 Patient profile

Kris T., a 16-year-old, Caucasian, biological male who identifies as gender nonconforming, presents to the clinic with complaints of anxiety, insomnia, and gastrointestinal discomfort. Kris T. reports using opioids and cannabis recreationally but recently began using Kratom and Delta-8-THC products due to their easier accessibility. Kris T. has been purchasing these products from local gas stations and online retailers for the past six months to help manage chronic back pain and anxiety.

3.2 Clinical presentation

The patient describes a gradual increase in Kratom use, starting at 1 gram daily and escalating to 10 grams daily. He reports initial relief from pain and anxiety but now experiences irritability, agitation, and muscle aches when attempting to reduce the dosage. Concurrently, he uses Delta-8-THC gummies, 50 mg daily, to aid sleep and anxiety but notes increased tolerance and decreased efficacy over time.

3.3 Assessment and diagnosis

A thorough assessment reveals symptoms consistent with Kratom dependence, including withdrawal signs such as rhinorrhea, myalgia, and insomnia upon cessation attempts. Males are more likely to experience acute side effects, withdrawal symptoms without cessation, and symptoms of Kratom Use Disorder.^[13] The patient's use of Delta-8-THC, while perceived as less harmful, correlates with cognitive impairment and mood disturbances. There is no specific antidote for Delta-8-THC intoxication, so interventions are limited to supportive care.^[16] Delta-8-THC toxicology screens are not currently available at most medical facilities,^[16] but other laboratory tests show elevated liver enzymes, suggestive of potential hepatotoxicity from Kratom.

3.4 Treatment plan

3.4.1 Detoxification and withdrawal management

- Gradual tapering of Kratom under medical supervision to mitigate withdrawal symptoms.^[9, 10]
- Symptomatic treatment for withdrawal, including clonidine for autonomic hyperactivity, nonsteroidal anti-inflammatory drugs for myalgia, and antiemetics for gastrointestinal distress.^[6]
- Consideration of adjunct medications such as gabapentin for anxiety and sleep disturbances related to withdrawal.^[16]

3.4.2 Delta-8-THC cessation

- Comprehensive education on the risks of unregulated cannabinoid use and support in discontinuing Delta-8-THC.^[8, 16]
- Introduction of evidence-based treatments for anxiety and insomnia, such as selective serotonin reuptake inhibitors (SSRIs) like sertraline, and cognitive-behavioral therapy (CBT) tailored to address anxiety and sleep issues.^[14]
- Utilization of sleep hygiene education and mindfulness-based stress reduction techniques to support the cessation process.^[17]

3.4.3 Long-term management

- Regular monitoring of liver function and overall health, including routine blood tests and physical assessments.^[9, 10]
- Ongoing psychological support through individual therapy, focusing on coping strategies and relapse prevention.^[6, 18]
- Referral to addiction specialists for comprehensive addiction treatment, including potential participation in support groups or 12-step programs.^[1, 12]
- Exploration of non-pharmacological pain management strategies, such as physical therapy, acupuncture, and yoga, to address chronic pain without the use of substances.^[8, 14]
- Development of a comprehensive wellness plan incorporating dietary modifications, exercise, and stress management techniques to improve overall health and well-being.^[2, 14]

4. DISCUSSION

For APRNs and other healthcare providers, the rise in the use of substances like Kratom and Delta-8-THC presents unique challenges and requires a comprehensive, informed approach. The variability in the chemical composition and effects of these substances necessitates thorough patient education and monitoring. Providers must stay abreast of current research and regulatory changes to provide the best care possible.

4.1 Kratom considerations

Understanding Kratom's dual action and potential for abuse is critical. Healthcare providers should employ evidence-based screening tools to identify Kratom use and dependence. Collaboration with addiction specialists and hepatologists

is often necessary due to the potential for liver damage and complex withdrawal management. Educating patients about the unpredictable nature of Kratom products can aid in preventing misuse and adverse effects. Providers should also be aware of the psychosocial factors driving Kratom use, such as self-medication for chronic pain or mental health conditions and address these underlying issues through comprehensive treatment plans.^[6] Associated risk factors for Kratom abuse include male gender, younger age, and use of other substances including opioids in particular but also cannabis, cocaine, and stimulants.^[4] In addition, emerging data indicates a higher risk for abuse for persons identifying as transgender or gender nonconforming.^[18]

4.2 Delta-8-THC considerations

The unregulated status of Delta-8-THC requires medical providers to be vigilant about its sources and potential contaminants. Clear communication about the differences between Delta-8 and Delta-9-THC, as well as the legal implications and health risks, is essential. Monitoring for cognitive and psychological effects and providing safer alternatives for anxiety and sleep disturbances can help mitigate risks associated with Delta-8-THC use. Healthcare providers should advocate for patients' access to high-quality, regulated products and support legislative efforts to establish clearer guidelines and safety standards for cannabinoids.^[8] Persons identifying as transgender or gender nonconforming are also at increased risk for Delta-8-THC use, reflecting broader substance use trends within these populations.^[17]

4.3 Clinical and policy implications

Most research available today is anecdotal, often not involving human subjects nor peer-reviewed.^[15] This has prompted groups such as the DEA and FDA to issue multiple warnings on products such as Kratom and Delta-8-THC to consumers, including children, due to a lack of a safety evaluation.^[4] Adding to the dilemma is a number of factors including variability in product formulations, mislabeling of products, misleading claims, marketing strategies directed at children, and a lack of consumer protection laws making these products more accessible, especially online where age is often not verified.^[3] For example, online searches for Delta-8-THC products increased 467% from 2019 to 2020 and subsequently 850% from January through August 2021 alone.^[15]

Medical providers are increasingly more likely to see patients under the influence,^[16] so APRNs are in a unique position to intervene in both clinical practice and public policy related to emerging substances like Kratom and Delta-8-THC. Clinically, providers must adopt a holistic approach that includes thorough patient assessments, individualized

treatment plans, and continuous monitoring of both physical and mental health outcomes. This involves integrating pharmacological interventions with psychotherapy and lifestyle modifications to address the multifaceted nature of substance use disorders.

Policy-wise, APRNs should engage in advocacy efforts to promote the regulation of these substances, ensuring safety and efficacy standards are met. This includes participating in professional organizations, contributing to public health discussions, and educating policymakers about the clinical realities and challenges associated with Kratom and Delta-8-THC. By doing so, these healthcare providers can help shape policies that protect public health while supporting patients' access to safe and effective treatment options.^[14] Additionally, APRNs and other healthcare providers are in positions to generate better data, including promoting rigorous and systematic reviews that focus on controlled clinical trials designed to help ascertain prevalence rates, laboratory findings, and other factors needed to develop risk/safety profiles. This information is critical for making the best regulatory oversight decisions at both the federal and state levels.^[1]

5. CONCLUSION

The case of Kris T. illustrates the dynamic complexity of the surging use of both Kratom and Delta-8-THC products. Kris T. possesses several known risk factors, including male gender, young age, identifying as gender nonconforming, and abuse of other substances, including cannabis and opioids. Another predominant factor is the circumstances of Kris T. living in a state with no recreational cannabis laws or age restrictions on the purchase and use of both Kratom and Delta-8-THC products. However, supportive care remains largely dependent on a case-by-case approach due to a lack of consensus guidelines in the management of patients using these substances.

Kratom and Delta-8-THC present new frontiers in the landscape of substance use and addiction. APRNs and other clinicians must be well-informed about these substances' pharmacological profiles, potential for abuse, and clinical management strategies. Continued research and regulatory oversight are essential to address the public health implications of these emerging substances. Clinicians must also advocate for comprehensive patient education and support systems to mitigate the risks associated with these unregulated compounds. By integrating clinical expertise with advocacy and education, APRNs can play a pivotal role in advancing the safe and effective treatment of substance use

disorders.

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AUTHORS CONTRIBUTIONS

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