Cannabis use and breastfeeding: frequency of use, delta-9 tetrahydrocannabinol in milk, and clinical strategies to reduce harm

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Abstract

As cannabis legalization expands, increasing numbers of pregnant and breastfeeding women may view it as a safe, natural alternative for managing health concerns. This article examines current research on cannabis use during breastfeeding, with a focus on delta-9 tetrahydrocannabinol (THC) concentration in milk. Frequency of cannabis use influences the amount of THC in milk and is related to self-reported health problems and adverse childhood experiences. This review also suggests clinical strategies for reducing risk while supporting maternal and infant well-being.

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Introduction

Delta-9 tetrahydrocannabinol (THC) is the principal psychoactive component in cannabis. THC is lipid soluble, and it crosses both the placenta and into breast milk.[1] Because of possible infant exposure to THC, major health organizations, such as the U.S. Substance Abuse and Mental Health Services Administration, the Centers for Disease Control and Prevention, and the March of Dimes recommend that childbearing women avoid cannabis.[2,3]

The percentage of pregnant or postpartum women who use cannabis is about 5%.[4] Although a relatively small percentage of childbearing women use cannabis, that percentage is expected to increase as more U.S. states legalize it for recreational use. Interestingly, although the overall percentage for use in the population as a whole is smaller, the percentages increase when other behaviors or circumstances are included. For example, one U.S. study using PRAMS data (n=3207) found that 27% of women who smoked in their last trimester also used cannabis.[5] If mothers had more than three stressors in the year before delivery or had an unintended pregnancy, 55% to 57% used cannabis.

Pharmacokinetics of delta-9 tetrahydrocannabinol in breast milk

THC's lipophilic properties allow it to bind to fat molecules in breast milk and cross the blood-brain barrier, potentially affecting the infant's developing brain. Determining its independent effects *via* breast milk is difficult because infants are often exposed in utero as well. However, researchers do understand how THC accumulates in milk.

Two studies published in the same year appear to offer contradictory findings.[6,7] In the first study, Baker *et al*. collected milk samples from 8 mothers before inhalation, and at 20 minutes, 1, 2, and 4 hours after inhalation.[6] They found that THC peaked in the milk at 1 hour and dropped off after that. There were no measurable concentrations of metabolites in breast milk within 4 hours of smoking cannabis. The relative infant dose was 2.5%.

The second study included 50 breastfeeding mothers who provided 54 samples.[7] THC was detectable in 63% of samples up to 6 days after the last reported use. The samples varied widely in the THC content. Frequent and chronic users had the highest concentrations. The authors suggested that future studies include plasma samples from mothers and babies to understand potential exposure levels fully.

Frequency of use and delta-9 tetrahydrocannabinol accumulation

Frequency of cannabis use is an important variable that determines the amount of THC in milk and can help us understand the discrepancy between these two studies.[6,7] In the first study, researchers controlled the dose, brand of cannabis that mothers used, and they were instructed to use it once.[6] THC cleared within 4 hours.

In contrast, the second study did not control the type and amount of cannabis that mothers consumed, and likely better represents what mothers actually do.[7] THC concentrations in milk varied widely depending on frequency and chronicity of use. In 63% of samples, THC was detectable up to 6 days after it was last used. Mothers who used it most frequently had the highest concentrations. The authors concluded that THC was detectable in most samples but recommended that future studies also include plasma levels for mothers and babies to better understand potential exposure and better understand infants' metabolism and accumulation patterns.

A study of 20 chronic cannabis users measured THC in milk and plasma at 2 weeks and 2 months postpartum.[8] Between 2 weeks and 2 months, mothers increased their frequency of cannabis use. As a result, breast milk THC concentration increased exponentially, by 30.1 ng/mL. In addition, THC was higher in milk than in plasma, demonstrating that cannabis is never completely cleared from milk when mothers use it frequently.

Determinants of frequent cannabis use: health problems and adverse childhood experiences

Since frequency influences the amount of THC exposure, it is important to consider factors that influence it. Two variables appear to be related: self-reported health problems and adverse childhood experiences (ACEs). These factors overlap in recent studies.

A non-perinatal population study from England and Wales (n=20,556) found a link between ACEs, cannabis use, and health symptoms, such as depression, anxiety, and post-traumatic stress disorder (PTSD).[9] Another non-perinatal sample also found a link between interpersonal violence that happened in the last 12 months, health problems, and cannabis use in a sample of 9889 American undergraduates.[10] They found a mediating effect of health problems for cannabis use. For those who used cannabis more than 6 times, interpersonal violence increased the risk of trauma-related symptoms, which then led to cannabis use.

Health problems were a common reason why a sample of 1327 women used cannabis while breastfeeding.[11] 89% of mothers used cannabis to address mental or physical health symptoms, including anxiety, depression, gastrointestinal symptoms, chronic pain, and posttraumatic stress disorder. Women who reported more symptoms used cannabis more frequently. The odds of frequent cannabis use were 2.7 for women reporting 1-2 health reasons, 5.6 for those reporting 3-4 health reasons, and 13.1 for those reporting 5 or more health reasons.

Similarly, a qualitative study of 20 mothers who used cannabis during pregnancy or breastfeeding found that 16 out of 20 (80%) used cannabis to treat health problems.[12] Doctors recommended it for 5 mothers, while 11 used cannabis to self-manage health problems, such as pain and sleep. 91% used cannabis to treat depression and anxiety.

ACE survivors were more likely to use cannabis while pregnant or breastfeeding in Nevada PRAMS data (n=2483).[13] Cannabis use increased by 96% for women who reported 1 ACE [confidence interval (CI)=1.3-2.94], 3.58 times for 3 ACEs (CI=2.69-4.77), and 3.67 times for 4+ ACEs (CI=2.36-5.72). A study of 303 women with high-risk pregnancies found that 75% had a history of both ACEs and increased cannabis use.[14] The sample was 68% Black, 19% White, and 7% Hispanic. The most common mental health sequelae were depression, anxiety, and PTSD. A study of 256 mothers found that higher ACE scores were associated with positive cannabis tests at the first prenatal visit (34%) and at delivery (15%).[15]

In our sample of women who used cannabis during pregnancy and breastfeeding (n=1343), 93% reported at least one ACE, and 59% reported 4 or more. In addition, 96% used cannabis to treat health problems (range = 0 to 8). No individual type of ACE significantly increased frequency of use, but the total number of ACEs was significantly related to frequency in bivariate analyses. However, mediation analyses revealed that ACEs were indirectly related to frequency *via* the number of health problems (*i.e.*, ACE total increased the number of health problems, which led to more frequent cannabis use). ACE total was not directly related to the frequency of use once health problems were accounted for. Our findings suggest that if practitioners address health problems, they may also lower the frequency of use.

Clinical strategies to reduce frequency

While abstinence is the safest recommendation, reduction in frequency may be a more achievable goal for some women. Practitioners can support harm reduction through the following strategies. i) early screening: screen for cannabis use early in pregnancy, preferably with urine testing, as self-report is often unreliable. Repeat as needed. Also screen for depression, anxiety, PTSD, and ACEs; ii) normalize disclosure: foster a supportive environment where mothers feel safe discussing cannabis use and work with mothers to develop a plan to lower use; iii) tailorharm reduction plans: it is important to encourage reducing frequency, explore cannabidiol-only alternatives when appropriate, recommend edibles over smoking to limit secondhand smoke exposure, and advise infrequent users to wait at least 4 hours before breastfeeding; iv) monitor infant wellbeing: educate mothers to watch for lethargy or feeding problems and seek medical attention if necessary. Also, encourage them to involve others in infant care when mothers are using; v) weigh breastfeeding risks: develop clinical guidelines to assess when THC levels are too high. With frequent, daily use, breastfeeding may be contraindicated; vi) offer non-pharmacologic treatments if possible: most of the women in our sample indicated that they believed that cannabis was a safe alternative to commercial medications. Given maternal preference for natural remedies, explore non-medication options for managing depression, PTSD, pain, and sleep issues when possible; vii) use interdisciplinary teams: effective care for perinatal substance use often requires coordination between providers, such as increasing access to mental health care, social work, or domestic violence services; viii) protect against discrimination: ensure equitable treatment and child welfare policies that do not disproportionately affect marginalized groups; ix) address root causes: since ACEs increase health problems and those drive cannabis use, addressing maternal symptoms directly may reduce frequency.

Conclusions

The science of cannabis and breastfeeding continues to evolve. These preliminary findings show how complex it is. Despite this, our goals do not change. We need to support the mother, ensure the safety of the infant, promote attachment between mother and baby, and help mothers reduce their frequency of cannabis use. Social support can help with all three of these goals. Providers have a key role in helping mothers navigate the postpartum period and lowering the THC in their milk.

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