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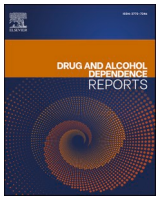

Perceptions, barriers, and facilitators of cannabis screening during pregnancy and labor: A qualitative study

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HIGHLIGHTS

- Cannabis use among pregnant women has substantially increased in recent years but disclosure is poor.
- Findings underscore the need to educate about risks of cannabis use, including during pregnancy and childbirth.
- Clinicians' verbal and non-verbal communication were key in deciding whether to disclose cannabis use.

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ABSTRACT

Background: Cannabis is the most commonly used federally illicit substance during pregnancy. Yet, little is known about women's lived experiences of being screened for cannabis use during pregnancy.
Objective: To explore perceptions of cannabis use during pregnancy and childbirth, including experiences of being screened for cannabis use during the intrapartum period.
Methods: We conducted a phenomenological qualitative study using semi-structured, online interviews with 16 English-speaking women who gave birth at a U.S. hospital within the past three months. After transcription of interview recordings, two coders analyzed data using inductive thematic analysis. We also generated descriptive statistics for sociodemographic characteristics and cannabis use behaviors.
Findings: Most participants were 25–34 years of age (75 %, n=12), Black (75.00 %. n=12), and had less than a bachelor's degree (68.75 %, n=14). Participants reported low-risk perceptions of cannabis use during pregnancy and often used cannabis to alleviate mental health conditions and pain during pregnancy and childbirth. Women reported mixed perceptions of harm, using cannabis as a medicine and because they were addicted, being fearful of disclosing cannabis use due to potential involvement of child welfare and protective services, and perceiving negative provider communication a barrier to disclosing cannabis use.
Conclusions: Findings underscore the importance of patient education about adverse maternal and neonatal health outcomes of prenatal cannabis use, regardless of whether disclosure occurs. To facilitate disclosure of use, close attention should be paid to verbal and non-verbal communication when screening and counseling women during pregnancy and childbirth. Additional studies are needed to further examine patient-provider cannabis-related communication, with a focus on identifying discriminatory behaviors and practices resulting in health inequities.

1. Introduction

Despite federal classification as a Schedule 1 drug, cannabis is the most commonly used federally illicit substance among pregnant women in the United States (U.S.), increasing in prevalence from 3.4 % in 2002 to 7.0 % in 2016 (Volkow et al., 2019). Increased prenatal cannabis use has been associated with decreasing risk perceptions (Jarlenski et al., 2017; Odom et al., 2020), perceived safety (McGinty et al., 2017), shifting social norms (Kolar et al., 2018), and legalization of cannabis for recreational adult use (Skelton et al., 2020a; Gnofam et al., 2019; Lee et al., 2020). Research published in 2022 suggests acceptability of cannabis use during childbirth, as 48 % of women reported they would

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consider cannabis use for future childbirths and 3 % reported use during their most recent birth (Chernek and Skelton, 2022). Importantly, the mean potency of Δ9-tetrahydrocannabinol (THC), the main psychoactive ingredient in cannabis responsible for addiction risk, is, on average, three-fold higher than in prior decades (ElSohly et al., 2016). Increases in THC potency could explain alarming prevalence estimates of cannabis use disorder among women who used cannabis during the past year, which ranged from 18.1 % to 26.1 % using 2007–2012 data from the National Surveys on Drug Use and Heath (Ko et al., 2015).

Despite increasing prevalence of cannabis use and addiction during pregnancy, there is little evidence about implications for clinical care and patient outcomes during the intrapartum period – a specific time in pregnancy beginning at the onset of labor through birth of the neonate and placenta. The pharmacokinetic properties of THC (i.e., highly lipophilic, stored in adipose tissues for long periods, and readily crosses the placenta) (Fogel et al., 2017; Grant et al., 2017; Bertrand et al., 2018; Wymore et al., 2021; Marchetti et al., 2017) indicate that prenatal use and exposure impact clinical care. Indeed, in utero cannabis exposure impacts neonatal clinical care, as exposure has been linked to adverse neonatal outcomes, including preterm birth, small for gestational age, admittance to the neonatal intensive care unit, and low birthweight (Avalos et al., 2024; Marchand et al., 2021). Therefore, it is logical to assume that intrapartum cannabis use may also have implications for clinical care. For example, one study found that non-pregnant women who used cannabis daily or weekly needed substantially higher doses of propofol to achieve adequate sedation for endoscopic procedures (Twardowski et al., 2019). Another case study describes a patient who experienced persistent perioperative tachycardia during an emergency cesarean section under combined spinal epidural anesthesia. The woman disclosed cannabis use prior to admission only after the cesarean section, citing legal concerns as the reason for non-disclosure (Tuncali, 2017). Thus, there may be clinical care implications for women using cannabis and also receive anesthesia or other medications typically given during the hospital stay for childbirth.

Thorough assessments during pregnancy are crucial to the provision of high-quality perinatal care. Subsequently, both the American College of Obstetricians and Gynecologists (ACOG) and the Association of Women's Health, Obstetric, and Neonatal Nurses (AWHONN) support universal verbal screening for cannabis use during pregnancy (American College of Obstetricians and Gynecologists Comittee on Obstetric Practice, 2017; Association of Women's Health and Obstetric and Neonatal Nurses, 2018). Evidence, however, indicates inconsistency in this practice. In a study of 2017–2019 Pregnancy Risk Assessment Monitoring System (PRAMS) data, 37.2 % of women reported they were not asked about cannabis use at any prenatal care visit during their most recent pregnancy (Skelton et al., 2023). Thus, examining screening practices for cannabis use during pregnancy, including barriers and facilitators to disclosure, is warranted. Although some prior evidence has quantitatively examined prenatal cannabis screening (Skelton et al., 2023; Pflugeisen et al., 2020; Rubin et al., 2022; Toquinto et al., 2020), little qualitative evidence exists exploring perinatal screening for cannabis use (Woodruff et al., 2021). To address this evidence gap, this study aimed to explore women's perceptions of cannabis use during pregnancy and the intrapartum period and experiences of being screened for cannabis use, including facilitators and barriers to disclosure, during the intrapartum period.

2. Materials and methods

2.1. Design

This study was conceptualized using a phenomenological approach, which aims to describe lived experiences of individuals. The study investigators are women who have experienced pregnancy and childbirth and have experience conducting qualitative studies with postpartum women. After receiving a Certificate of Confidentiality from the federal government, the Towson University institutional review board approved this study (#2031).

2.2. Recruitment

Recruitment was conducted during the summer of 2023 via unpaid posts on the Facebook Group, CannaMammas, and the Ganja Moms Community Group on the What to Expect Forum, which directed interested individuals to an eligibility screener hosted on the Qualtrics survey platform. The eligibility screener asked several questions to determine eligibility based on the following inclusion criteria: (1) able to read and write in English; (2) gave birth in the last 3 months in a U.S. hospital; and (3) was asked about cannabis use during their most recent hospital stay for childbirth. To capture different perceptions and experiences, participants did not have to use cannabis to be included. Instead, a quota sampling strategy was used to ensure at least 50 % of the sample reported cannabis use during their most recent pregnancy. Eligible participants were provided with informed consent information and consented electronically within Qualtrics. Ineligible participants were thanked for their interest in the study.

Of the 308 people who completed the eligibility screener, 60 responses were duplicates, 47 were incomplete, and 72 participants were ineligible. Potential participants were contacted in batches of 20 via email, ordered by eligibility screener completion date until 100 participants were contacted. Most emails did not receive a response. Twenty-five interviews were scheduled to be conducted via Zoom during June and July 2023. Given the population of interest (i.e., women with young infants), interview times were selected by participants based on their availability; most interviews were scheduled for weeknights and weekends.

2.3. Data collection

Zoom meeting invitations were sent with instructions to select settings designed to protect participant confidentiality (i.e., waiting room enabled, use of a pseudonym, cameras off). When audio recording interviews, the option to record participant names was turned off. Interview duration ranged between 15 and 35 minutes. Upon interview completion, participants were sent a hyperlink to a demographic questionnaire. At the end of the demographic questionnaire, participants could opt to enter their email address to receive compensation (a $25 Amazon e-gift card) for study participation; 100 % of participants opted in.

2.4. Measures

Study investigators created a semi-structured interview guide consisting of opened-ended questions about experiences and perceptions of cannabis use during pregnancy and labor, as well as experiences and comfort with screening for cannabis use (Supplemental Appendix 1). Although exploratory prompts were built into the interview guide, there were occasions where non-scripted follow-up questions were needed to gain clarity or affirm participant responses.

2.5. Data analysis

Interview transcripts were uploaded to NVIVO 14 for analysis. Thematic analysis was conducted using the six-step approach described by Braun and clarke (2012). First, transcripts were read to renew familiarity with data prior to codebook development. Next, a coding tree was developed using in-vivo coding, where participants' key phrases are used as the code. Subsequently, bias resulting from misinterpretation of participants' words is reduced. To increase analytical rigor, the codebook was piloted with small sample of transcripts (25 %, n=4), during which two coders independently coded and discussed each transcript, revising the codebook as needed. After reaching consensus on a final

codebook, both coders analyzed two transcripts (n=12.5 %) to establish inter-rater reliability. Inter-rater agreement was high (95.0 %) and therefore, remaining transcripts were analyzed by a single coder. Themes and subthemes were identified and reviewed for accuracy and completeness. Descriptive statistics were used to examine sociodemographic characteristics and cannabis use behaviors and performed using Stata 14.1 (StataCorp).

2.6. Results

Socio-demographic characteristics of participants (N=16) are reported in Table 1. The majority of participants were Black (75.0 %, n=12), non-Hispanic (87.5 %, n=14), between 25 and 34 years of age (75.0 %, n =12), and had less than a bachelor's degree (68.8 %, n=11). The average age of participants' youngest child was 9 weeks. Thirteen participants (81.3 %) reported using cannabis during their most recent pregnancy; most (62.5 %, n=10) reported smoking cannabis in the past month (Table 2).

Themes were identified within the topics of perceptions of cannabis use during pregnancy, reasons for cannabis use during pregnancy, and screening for cannabis use during pregnancy and the intrapartum period (Tables 3–5).

3. Perceptions of cannabis use

Under the topic of perceptions of cannabis use, the following themes emerged: mixed perceptions of harm, varied risks by mode of administration, legal status as a consideration, personal autonomy, and cessation to avoid child welfare and protective services agency involvement.

3.1. Mixed perceptions of harm

Although most participants perceived cannabis use during pregnancy to be low-risk, a few reported perceptions of harm relating to cannabis use during pregnancy. Participants reporting cannabis use during pregnancy more frequently reported low risk perceptions. Some participants promoted the use of cannabis to treat pregnancy symptoms such as nausea and poor appetite. One participant stated,

> "I was told that you could only smoke marijuana until you get up until 6 months, and then after that you have to stop. But I tested my luck, and nothing came out wrong with my second child because I smoked the whole entire 9 months. I even smoked it when I was breastfeeding."

Other participants advised avoiding cannabis during pregnancy based on personal experiences of adverse outcomes, stating,

> *"Pregnant women should be advised not to take cannabis during pregnancy because it doesn't only affect you. It does affect your unborn baby. Because like me, I give birth prematurely, and my baby's weight was under weight."*

Participants with more neutral perceptions were uncertain about how cannabis impacts fetal health and desired more information about potential health effects. Importantly, participants reporting cannabis use during pregnancy also desired to learn more about potential effects.

3.2. Varied risks by mode of administration

Most participants reported greatest familiarity with the smoked forms of cannabis, followed by edibles. Some participants perceived smoking to be worse than other modes of administration, *"If you're smoking, if anybody's smoking, I just feel like there should be a limit because smoking has a higher effect. I mean, on the lungs than any other [mode of administration]."* Other participants perceived smoking to be the least risky mode of administration, especially in comparison to high-potency products (e.g., edibles, weed butter), which participants understood had a higher potency and thus, a higher potential for harm to the fetus. One participant stated, *"There are some modes which can be harmful, but for me they most well, the one I use frequently is smoking."*

3.3. Legal status as a consideration

Participants noted differences in perceptions of cannabis use during pregnancy by cannabis legality. Some participants believed cannabis use would be more accepted by doctors in states with recreational cannabis legalization. *"And it's like some states. It's a huge deal. And then other states. It's not that big of a deal…"*. One participant thought legal status would increase their comfort with disclosure,

> *"If it was legal in my state, then I would be more comfortable answering it like, "yes" but it - because it's not. It makes me a little scared of DHR or*

Table 1
Demographic characteristics of participants, N=16.

Characteristic	N(%) or Mean(Range)
Age	
18–24 years	2 (12.50)
25–29 years	8 (50.00)
30–34 years	4 (25.00)
35–39 years	2 (12.50)
Race	
Black or African American	12 (75.00)
American Indian	4 (25.00)
Ethnicity	
Spanish, Hispanic or Latino	2 (12.50)
Not Spanish, Hispanic, or Latino	14 (87.50)
Education	
High School Diploma/Some college	7 (43.75)
Some college or Associates Degree	4 (25.00)
Bachelor's or Master's degree	5 (31.25)
State Cannabis Legalization Status	
Fully Legal	8 (50.00)
Fully Illegal	3 (18.7)
Mixed	5 (31.25)
Medical Card	
Yes, currently using cannabis for a medical condition	1 (6.25)
Yes, but not currently using cannabis	4 (25.00)
No	10 (62.50)
Number of children	2.75 (1.65)

Table 2
Cannabis use characteristics of sample, N=16.

	N (%)				
Cannabis product	Past-month use	Past 3 months	Past year use	Lifetime use	Never used
Marijuana/pot/weed (smoked form)	10 (62.50)	4 (25.00)	0 (0.00)	1 (6.25)	1 (6.25)
CBD products	1 (6.25)	4 (25.00)	2 (12.50)	2 (12.50)	7 (43.75)
Cannabis edibles (cookies, brownies, gummies, drinks, etc.)	3 (18.75)	4 (25.00)	3 (18.75)	4 (25.00)	2 (12.50)
Cannabis concentrates (dabs, hash oil, shatter, wax, etc.)	3 (18.75)	3 (18.75)	1 (6.25)	3 (18.75)	12 (37.50)
Topical cannabis products (lotions, creams, etc.)	1 (6.25)	1 (6.25)	3 (18.75)	4 (25.00)	7 (43.75)
Hemp	1 (6.25)	2 (12.50)	0 (0.00)	4 (25.00)	9 (56.25)

Table 3
Themes relating to perceptions of cannabis use during pregnancy.

Theme	Description	Representative Quotations
Mixed perceptions of harm	• Not harmful o Helpful for morning sickness o History of cannabis use in pregnancy with no [reported] adverse outcomes • Harmful o Risk of preterm birth o Risks to baby	*"I don't see nothing wrong with it, because most reasons people smoke cannabis during pregnancy is because it helps with morning sickness."* *"I feel it's natural. Marijuana is natural so they have to be specific. Is natural and everyone I know smokes is using in some form."*
Varied risks by mode of administration	• Smoking o Less harmful because potency is known o More harmful due to risk of coughing and vomiting • Edibles o More harmful because potency is less known	*"It probably would be more beneficial if they tried the oil or something outside of smoking, because even that sometimes, you know, like, you're coughing, and your already nauseous, it can make you throw up so that could actually be better than smoking."* *"smoking cannabis is better than eating the edible… because you know, when you're smoking it, you're not using a lot of a lot of weed, you know, you just using like a little… versus like the weed butter, and certain edibles, has, like a high dose of weed butter in it. So is you. You can never be. You can never be sure on how much you're using when it comes down to the edible."*
Legal status as a consideration	• More comfortable using cannabis in states where it is legal • Mixed comfort disclosing use o Provider might be more accepting o Still potential for child welfare and protective services agency involvement	*"It would help ease their mind. It's just the only thing that it's just where you live at. If it's legal or not…but if it was legal, then it would be the perfect thing, because you could focus more. You know, you could be relaxed more. And again, it helps with nausea, it can help with the pain."*
Personal autonomy	• Cannot control behaviors of others • Cannabis use during pregnancy a personal decision	*"I can actually say that I'm proud to say that yes, I do smoke [cannabis] but when it comes down to like my nurse or my doctor, you know, like they strongly recommend that you don't smoke or use cannabis in no type of way because it can create a birth defect in the children and it's not healthy, but it's like, you know, sometimes people are gonna do what they want to do"*
Cessation to avoid child welfare and protective services agency involvement	• Stopped using cannabis during pregnancy to avoid child welfare and protective services agency involvement o Cessation only to get THC out of system at birth • Taking classes to prove not using cannabis	*"I felt that's okay because I wasn't doing it. I stopped at a certain point. So, I wasn't necessarily doing it up until I got up to labor…. I stopped at like 5 months, so I can get, you know, sort of get it out of my system so I won't have to face any consequences with DHS, stuff like that."* *"Because you too far along [during pregnancy]… You have to take certain classes, you know, to prove that you can work without have to smoke cannabis and take care of your child without needing cannabis all the time."*

Table 4
Themes relating to reasons for cannabis use.

Theme	Description	Representative Quotations
Cannabis as medicine	• Self-medicate using cannabis o Coping with medical conditions o Pregnancy ▪ Nausea and/or vomiting ▪ Lack of appetite o Pre-existing conditions ▪ Back pain o Childbirth ▪ Anxiety/stress ▪ Labor pains	*"I think it's a good solution, because it helps nausea, headaches, it gives you appetite when you can't eat. You also have a lot of pain, too, when you're pregnant like at the beginning… So, it helps with that pain. And then throughout pregnancy you're so heavy you have a lot of swollen ankles. You have varicose veins. That helps it. With that. I mean, it's just a lot of great benefits to it."* *"I used to smoke a couple of times before becoming pregnant. When I was pregnant with my daughter, the pain that came with the contractions were unbearable, so I actually resorted to smoking to help me with the pain."*
Addiction to cannabis	• Inability to stop using cannabis • Cessation support from home nurse	*"It may actually have an effect on the child… not too good. But sometimes you just can't resist it because you just need it to fight a craving."* *"At first, I couldn't stop it because it was a habit, but my home nurse [explained] to me that I need to stop it, because it will cause a great damage to my child. She tried explaining that it will cause tissue damage and it might also affect my child's brain, so I just had to stop it."*

the police…not scared of doing it while I'm in labor or in front of them, just more of like legal stuff."

3.4. Personal autonomy

Participants perceived cannabis during pregnancy as a personal decision influenced by many factors. One participant summarized this sentiment, stating,

"*I don't think that's healthy… I don't think I'd advise anybody to do that. But we have different things and motivators… I don't really think taking cannabis during contractions is really advisable… But if that's what gives you the strength and motivation to get through it. Then it's okay."*

3.5. Cessation to avoid child welfare and protective services agency involvement

A common theme among participants was avoidance of child welfare and protective services agencies, referred to as Child Protective Services (CPS), Department of Children and Families (DCF), or Department of Human Services (DHS) by our participants depending on their state of residence. Most participants reported being scared to use cannabis during pregnancy due to potential risk of child welfare and protective services agency involvement after birth. One participant shared her experience with protective services involvement after birth, which came as a shock to her because she was never told this was a possibility. Despite perceived beliefs that cannabis use was low risk during

Table 5
Themes relating to screening for cannabis use.

Theme	Description	Selected Quotations
Barriers	• Fear of repercussions o Feelings of shame o uncertainty about provider response o Potential for child welfare protective services agency involvement • Provider perceiving cannabis use as unacceptable o Dishonesty o Sought information about cannabis from someone else • Lack of prior relationship with clinician screening for cannabis use o Fear of disclosure o Embarrassment • Judgmental provider verbal and non-verbal communication o Verbal o Non-verbal	*"I just didn't really feel safe to say it at first. I was kind of ashamed, and I just didn't know how to start saying it out. You know I'm using. I'm using Cannabis while I'm pregnant. I don't know how to start the conversation"* *"I think if she had told me that I can actually take it, but then [she told me] I should watch how much of it I take and as much as it is not really good health wise. Like, okay to them the doctors don't feel it's not fine. But I feel it's natural. Marijuana is natural so they have to be specific. Is natural and everyone I know smokes is using in some form."* *We have the morning sickness. It gives you an appetite and stuff like this. So he didn't feel too much against it."* *"He was understanding, because he said, he dealt with people that you know do worse than cannabis. He said he didn't feel like cannabis was something that should be. I guess against because it helps with a lot of things. It helps like I said, like, I mentioned at first.* *"They could have. They could have made it seemed like it wasn't they first rodeo, you know, like, it's not the first time seeing somebody who smoked during their pregnancy before."* *"I feel like I was being judged because I used to smoke during my pregnancy… it's like the way they was looking when I was answering the questions, you know, just like you could feel judge by somebody's looks."*
Facilitators	• Provider perceiving cannabis use as acceptable • Rapport with provider • Perceived genuine caring attitude of provider • Positive provider communication o Verbal o Non-verbal	*"Because, she says that it doesn't affect the baby, and it's fine. It helps with everything like this stuff that I named. It's a lot of women that smoke, when their pregnant because, like the first trimester is really bad, and she's all for it."* *"It's good that I'm not feeling bad. And then she ran a test on me, and then she saw that everything was going well, the baby was safe inside me. Then she told me it's better to continue taking it as tea, not smoking it."* *"I'm very close to this doctor. And at that point I was having complication until I would say it was a matter of life or death. So I just had to be truthful that day, you know, in order to save me or my child… and so that was why I disclosed it to my doctor. I'm sure maybe I wouldn't have disclosed it to another person that I wasn't close to. So because I was very close [to the doctor] and it's a family doctor, I had to just open up to him.* *"They only asked me am I using anything you know you you're not supposed to use. And I…wouldn't say it's something. At first I was like, "No, no," I denied it. At a point, he just asked me like, you know we have to. We have to be able to communicate with each other, to be able to help each other. You know, you have to trust me. I'm a doctor. So I said okay, okay, I've been using cannabis, I've used it just twice. He just asked me to be able to know how to take care of us."* *"And then a whole lot of questions, and the tone he's using while talking to me was very mild, friendly, and so he looked like someone who really cares about my well-being and that of my child. And so with that, and he created a friendly atmosphere, and I was very comfortable discussing my cannabis use with him.*
Uncertainty about screening processes	• Uncertainty about screening process o Not informed of timing of screening • Uncertainty about consent for screening o Not informed about who was going to be screened • Uncertainty of consequences/follow-up after screening o Child welfare and protective services agency involvement o Testing of infant	*"I don't know if they tested during the pregnancy, they never let me know anything about me being positive for it. It was just after the delivery that they said they tested the umbilical cord and they found THC. May it's just a normal process that they normally do, but I'm not too sure why they would have tested it."* *"They didn't ask me. They don't ask you. They just test you and the baby like you don't have…How can I say this? You can't give them permission. They just do it on their own."* *"I had a very severe complication, and so I was in the hospital, and that was when they had to carry out the test and the screening and the advice came after."*

pregnancy, some participants reported cannabis cessation the end of the second or beginning of the third trimester to avoid protective services agency involvement resulting from a positive biochemical screening at the time of birth. One participant stated, "*And they test the babies…but the whole aspect of DHS being involved is way too scary for me*".

4. Reasons for cannabis use

Two themes emerged as reasons for cannabis use during pregnancy: cannabis as medicine and addiction to cannabis.

4.1. Cannabis as medicine

Participants perceived cannabis as a type of medicine, often citing use of cannabis products to alleviate mental health conditions (i.e., anxiety) and pain during pregnancy and/or childbirth. Participants reported they used cannabis to cope with pregnancy-related conditions including nausea, decreased appetite, headaches, and pain related to preexisting conditions. One participant stated, *"At first, I used it as a natural way to treat nausea and vomiting especially any morning sicknesses. I just like taking it."*

Participants also described cannabis as potentially being helpful with managing pain and tension during labor. One participant shared her experience of using cannabis during labor,

> *"While in the start of labor. You know, I was very tense. It was my third time being in labor, and even though I knew what the process was, I was still kind of, you know, nervous and uptight, but thanks to me smoking, it loosened me up."*

One participant reported an adverse reaction that occurred during labor, *"I can say that the only thing that did go wrong while I was in labor from eating the edible was my blood pressure, because my heart was racing very fast.*" Many participants reported wishing they could use cannabis during labor for perceived benefits, *"If I was able to do it where I was in labor. I feel like you could be calm enough and focus enough. You wouldn't even need an epidural.*"

4.2. Addiction to cannabis

A couple of participants reported being addicted to cannabis. One participant stated that despite knowledge of potential risk to the fetus, she could not resist cravings,

> *"I found pleasure in taking it as it helps ease my mood and make me feel relaxed, and all that… I also told [the doctor] that it was a form of cravings, you know, having to inhale the scents and all that. I was, you*

know… addicted to taking it because there was definitely not a day that passed by without me taking it…".

5. Screening for cannabis use

Themes related to screening for cannabis use were categorized as either barriers or facilitators to cannabis use disclosure. Barriers included fear of repercussions, provider perceiving cannabis use as unacceptable, lack of rapport with the provider, and judgmental provider verbal and non-verbal communication. Facilitators included provider perceiving cannabis use as acceptable, positive rapport with provider, perceived genuine caring attitude of provider, and positive provider verbal and non-verbal communication. Additional themes related to screening included confusion about screening protocols and providers' mixed responses following disclosure.

5.1. Barriers to disclosure

5.1.1. Fear of repercussions

Although some participants felt comfortable disclosing cannabis use to their health care provider, many participants felt reluctant to disclose use due to fear of possible repercussions. One quote from a participant summarizes this theme well, "*"it's kind of like a toss-up because if the baby tests positive and you don't disclose it, then you're in a lot a lot of trouble. But then, if you disclose it, you're still kind of in trouble…"*.

Participants reported hesitancy to disclose cannabis use due to feelings of shame, uncertainty about provider response, and potential punitive actions resulting from disclosure (e.g., fear of potential child welfare and protective services agency involvement).

5.1.2. Provider perceiving cannabis use as unacceptable

Some participants shared they were not honest about their cannabis use with their provider due to concerns about the provider's response. One participant shared, "*It did sound like she had high hopes that something would go wrong, but me I had faith that nothing was going to go wrong, even though I had used cannabis before I had come into labor*." Some participants reported their provider was adamant that cannabis use posed health risks during pregnancy and advised participants to stop using cannabis or reduce cannabis consumption. In response, participants were not truthful when asked about cannabis use. Some participants reported seeking advice about cannabis use from alternative sources in effort to avoid discussions with their prenatal care provider.

> "*I looked for information about how much it could affect my child…I didn't actually talk to my doctor because I know he really was against it but then I kept using it secretly.*"

Another participant reported contemplating changing prenatal care providers from an obstetrician-gynecologist to a midwife because they perceived a greater sense of acceptability from midwifes,

> *"If it was something that I choose to do in the future, I would probably do it under the discretion of like a midwife or something.*

5.1.3. Lack of rapport with provider

Participants reported that lack of rapport and lack of a trusting relationship with their provider were barriers to disclosing cannabis use. For example, not having a prior relationship with the provider led participants to not feel comfortable disclosing their cannabis use*, "I was kind of embarrassed… I just had this feeling that I did not just want to disclose it to her and tell her what I do [because she was a stranger]"*.

5.1.4. Judgmental provider verbal and non-verbal communication

Some participants reported feeling judged and stigmatized by their prenatal care provider or nurse at the hospital. One participant shared that during discussions with their prenatal care provider, the "*tone [of voice] changed*" after disclosing cannabis use. Another shared that the provider's pessimistic viewpoint was a barrier to open communication about cannabis use,

> *"It was basically the way that she talked about it which gave me that sense that she felt like something was going to go wrong, because the whole entire time, like every time I came in for appointments… And every time I let her know throughout the pregnancy - with my last baby I let her know "Yes, I did use it", and she was just like, "Well, I have had patients who have used cannabis heavily throughout the whole entire 9 months of pregnancy, and something went wrong with their baby having a heart defect or having just any type of issues after child birth and during childbirth…*".

5.1.5. Facilitators to screening

5.1.5.1. Providers perceiving cannabis use as acceptable. Some participants reported their provider was accepting of cannabis use, which made them feel more comfortable disclosing use. One participant, whose prenatal care provider was a midwife, stated, "*She is okay with it as long as it doesn't harm the baby, which she's a believer that it doesn't really harm a baby as long as it's not too much."*

5.1.5.2. Positive rapport with provider. In instances where participants had an existing relationship with their physician, participants reported increased comfortableness disclosing cannabis use. One participant shared, *"My doctor knew that I smoke when she test(s) me. She knew that I smoke. I told her before she started testing me. I had 7 kids with her…But I didn't tell the hospital about it*". Participants also shared that congruent demographic characteristic between themselves and the provider, including race, helped establish rapport and trust. One participant shared that although she initially did not disclose use, the provider was able to establish a trusting relationship, which subsequently enabled more honest communication about cannabis use,

> *"The doctor asked me if I was using cannabis… at first I lied and I said, "no". And he was like "Are you sure?" I just had to deny it at first, because first I was scared and I was ashamed…I just didn't really feel good about it. He just said, "Okay, you have to trust me"… he had to win my trust… "for the baby('s) sake," as he said. So, I told him I used it twice even though I used it more than that."*

5.1.5.3. Perceived genuine caring attitude of provider. Women reported they felt more comfortable with providers who they perceived genuinely cared about their well-being and the well-being of their unborn baby. *"Honestly, they should know what I'm taking or what I'm on before even doing blood work to find out that way. I'm open and honest about it."* Another participant shared, *"Yes, I told her that I was using. She did not approve, you know, but she did let me know that she - if anything was to go wrong, then she would be able to help fix it. So if my baby had any defects or stuff like that."*

5.1.5.4. Positive provider verbal and non-verbal communication. One participant reported the provider's friendly, non-judgmental approach increased her comfort with the provider, and in turn, disclosure of cannabis use, *"She didn't look down on me. She was just friendly. She approached me in a friendly manner. That's why I disclosed it to her at the moment."* Another participant shared the mild tone and caring approach of her prenatal care provider aided in her disclosure of cannabis use.

5.1.5.5. Confusion about screening protocols. Confusion about screening protocols during pregnancy and the intrapartum period was a common theme related to the screening process. Some participants reported they weren't asked about cannabis use during admission to the hospital but instead were asked after birth only.

"I wasn't asked during labor, but I was kind of asked after I gave birth. I was a little worried because I did do it during the pregnancy. So, after I gave birth, they found THC on the umbilical cord. So, they did involve DCF [Department of Children and Families], but DCF was just a one-day thing. They let the whole situation go, but as far as them asking me, it was after the labor."

Most participants reported confusion about how their newborn was tested, including uncertainty about the consent process for toxicology testing, with many participants reporting they were never told they would be tested for use at the time of birth. One participant shared, "*They didn't ask me. They don't ask you. They just test you and the baby."* Another shared their experience with child welfare and protective services after testing positive in the hospital,

"…they came as soon as we left the hospital like the very next day I was sleeping. Her dad came in and he woke me. He said DCF is outside. I was like 'Are you serious?' I was kind of in shock and asked "Why?" and he was like, "I don't know. They're just here." So pretty much for that reason I wouldn't want them to test is DCF."

Participants shared ways they thought patient-provider communication about cannabis use could be improved. Many participants through their health care provider could benefit from additional training on how to communicate about cannabis use. One participant shared, *"I feel like they didn't know how to converse about it."* Other participants felt that cannabis legalization for recreational use would help them feel more comfortable disclosing use during pregnancy, *"Just really making it legal in our state. I think that it would be a lot more comfortable for women to talk about how they do use it while they're pregnant"*. Another participant reported, "[I] *still don't think I would have disclosed it"* when talking about legalization.

5.1.5.6. Providers' mixed responses following disclosure. Participants reported varied provider responses upon verbal disclosure of cannabis use or a positive toxicology screening. Some participants reported their provider recommended cessation, while others recommended switching modalities. In response to disclosure of cannabis use, some participants shared that their provider counseled them on risks of continued use. Other participants reported their provider did not counsel them after they disclosed cannabis use. Some participants reported discussing cannabis use during breastfeeding with their provider, *"They did tell me that if I was going to use cannabis while breastfeeding to make sure that I wait at least 3 hours before breastfeeding depending on how much I use."*

6. Discussion

In this qualitative study, we examined perceptions of cannabis use during pregnancy and childbirth and experiences of being screened for cannabis use during pregnancy in a predominately Black sample of postpartum women in the U.S. Our findings are aligned with prior evidence reporting varied reasons for prenatal cannabis use. Prior evidence demonstrates women report using cannabis during pregnancy to aid in management of pregnancy-related conditions (e.g., nausea, vomiting, poor appetite, difficulty sleeping) and to alleviate stress or anxiety (Vanstone et al., 2021; Skelton et al., 2020b; Ko et al., 2020). In addition to these reasons, study participants reported using cannabis to manage pre-existing conditions, including chronic pain and anxiety, and because they were addicted to cannabis. A novel finding of this study is the use of cannabis during the intrapartum period, in which participants described using cannabis to manage pain during labor and to cope with fear regarding childbirth. Some participants reported using cannabis prior to hospital admission for childbirth, which potentially has clinical implications for the provision of care during the intrapartum timeframe.

Prior studies have found that smoking is the most common mode of administration during the preconception period (Young-Wolff et al., 2022). In our sample, smoking was the most frequently reported mode of administration, followed by edibles, with mixed perceptions of harm across different modes of administration. Some participants thought smoking cannabis would be a preferred, less risky mode, while others perceived edible consumption to be less risky. Inconsistent maternal knowledge about risk across varying modes of administration is a clear area of future intervention – and one that could be addressed via patient-provider communication. Future interventions should seek to develop education materials to ensure that women who use cannabis during pregnancy are familiar with risks across different modes of administration and cannabinoid composition (i.e., CBD vs THC).

In addition to recommending universal screening for cannabis use during pregnancy, ACOG recommends that for women who disclose use, providers should encourage cannabis cessation and counsel women about potential risks of continued use during pregnancy (Association of Women's Health, 2018). Prior studies demonstrate self-reported estimates of prenatal cannabis use are substantially lower than biochemical estimates (Skelton et al., 2022; Young-Wolff et al., 2017), supporting the notion that many pregnant women are hesitant to disclose cannabis use due to fear of punitive consequences (e.g., child welfare and protective services agency involvement) and health care provider judgement (Woodruff et al., 2021; Holland et al., 2016; Young-Wolff et al., 2020); our findings are consistent with prior research. Identification of facilitators of cannabis use disclosure – provider perceiving cannabis use as acceptable, positive rapport with the provider, perceived genuine caring attitude of the provider, and positive provider verbal and non-verbal communication – is novel. Regarding provider communication, study participants emphasized that tone of voice, body language, and verbiage used were important factors when contemplating cannabis use disclosure. Future studies should further examine positive communication styles associated with disclosure of cannabis use.

Improving patient-provider communication about cannabis use is imperative to promote shared-decision making. Increased patient-provider communication about cannabis would, in turn, hopefully reduce cannabis use during the perinatal period and ultimately, adverse health effects of exposure. Patient-provider communication about cannabis use cannot, however, be improved if mandatory reporting policies for cannabis use remain. One study participant shared that she would be more likely to share cannabis use with her prenatal care provider if cannabis was legal in her state. Regardless of legality, however, physicians are required to report cannabis use during pregnancy, as it remains a Schedule I substance. Undoubtedly, patients should not be punished for honest communication with their prenatal care provider. Until state policies for reporting of cannabis prenatal cannabis use change, patient fear of punitive consequences – a crucial barrier to patient disclosure – will remain.

Findings from this study underscore the importance of positive verbal and non-verbal communication when screening for cannabis use during pregnancy, including the intrapartum setting and suggest a need for professional development about screening and communication related to cannabis use for clinicians who encounter pregnant women. Specifically, hospital and outpatient-oriented professional development that reinforce positive verbal and non-verbal communication styles (i.e., active listening, motivational interviewing) could greatly improve disclosure of cannabis use. As stated above, disclosure of cannabis use should not be used to punish women but instead prompt clinician-initiated communication about risks and referral to treatment, if warranted.

Recent evidence suggests prenatal and intrapartum toxicology screening for cannabis use is discriminatory and can result in health disparities. For example, a study by Pflugeisen et al. (2020) found that Black women were 2.8 and 1.7 times more likely to undergo toxicology screening than Latina and White women, respectively ($p < 0.001$) and that women using subsidized insurance status were 3.5 time more likely to be screened ($p < 0.001$) (Pflugeisen et al., 2020). Another study found that indications for toxicology screening varied; Black and Hispanic women were 4.26 times and 5.75 times more likely to have toxicology

screening for an indication aside from substance use disclosure compared to White women, respectively (Perlman et al., 2022). Although there is a need for future research that examines women's perspectives on health inequities and disparities in verbal and toxicology screening for cannabis use during pregnancy, it is clear that hospitals, clinics, and health care clinicians should evaluate existing screening policies to identify and revise those that perpetuate discrimination and exacerbate health disparities.

Study findings should be interpreted within the context of some limitations. Given the phenomenological approach which utilized a non-probability sampling design and a focus on the hospital setting for childbirth, generalizability of study findings is limited. Firstly, several participants were scheduled for interviews but did not show up and could not be reached for rescheduling. This could be because participants decided they did not want to participate in the study (perhaps due to fear of participation) or because they no longer had availability. As demographic questionnaires were not completed for these participants, we are unable to determine if selection bias was present. Many participants seemed hesitant to discuss their experiences of screening for cannabis use, especially when child welfare and protective services agency involvement occurred. Likely, this hesitancy is linked to fear of punitive consequences; future qualitative studies should aim to increase participant trust prior to data collection to improve participant comfort with such a sensitive topic. Lastly, the interview guide did not focus on perceived discriminatory screening practices; future research should address this limitation.

7. Conclusion

This qualitative study explored perceptions of cannabis use during pregnancy and childbirth and experiences of being screening for cannabis use in a sample of predominately Black postpartum women in the U.S. We found that women reported mixed perceptions of harm, using cannabis as a medicine and also due to addiction, feared disclosing cannabis use due to potential child welfare and protective services agency involvement, and perceived negative provider communication (i.e., verbal communication, body language) as a barrier to disclosing cannabis use. Study findings underscore a need to reexamine prenatal and intrapartum screening processes to improve patient-provider communication about cannabis use to reduce health disparities while simultaneously safeguarding maternal and neonatal health outcomes.

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CRediT authorship contribution statement

S. Nyarko: Writing – original draft, Formal analysis. **S. Iobst:** Writing – review & editing, Project administration, Methodology, Funding acquisition, Conceptualization. **K. Skelton:** Writing – review & editing, Writing – original draft, Validation, Supervision, Software, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of Competing Interest

The authors declare there are no conflicts of interest to report, financial or otherwise.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.dadr.2024.100274.

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