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Perspectives of adolescents and young adults on cannabis use during pregnancy

Christopher Whitlock [a], Claire Chang [a], Regina Onishchenko [a], Madgean Joassaint [b], Emily Madlambayan [b], Lauren Oshman [c,d], Christopher J. Frank [c,d,*]

[a] University of Michigan Medical School, 1301 Catherine St., Ann Arbor, MI 48109, USA
[b] University of Michigan, 550 S State St., Ann Arbor, MI 48109, USA
[c] Department of Family Medicine, University of Michigan Medical School, 1018 Fuller St., Ann Arbor, MI 48109, USA
[d] Institute for Healthcare Policy and Innovation, University of Michigan, 2800 Plymouth Rd, Ann Arbor, MI 48109, USA

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ABSTRACT

Purpose: Rates of cannabis use during pregnancy are highest for adolescents and young adults (AYAs). This study aims to understand AYA perspectives regarding the medical and legal consequences of prenatal and parental cannabis use.

Methods: This study delivered five open-ended survey questions regarding prenatal cannabis use in May/June 2022 via a text message polling platform to the MyVoice cohort, a cohort of AYA aged 14–24 throughout the United States recruited from social media to target national benchmarks set by the American Community Survey. We used qualitative content analysis to analyze open-ended responses and summarized code frequency and demographic data with descriptive statistics.

Results: Of 826 AYAs, 666 responded to at least one question (response rate = 80.6 %) and the mean age of respondents was 19.9 years (SD = 2.3). We identified four themes from responses: (1) AYA believe cannabis is harmful during pregnancy, (2) they are divided on whether prenatal cannabis exposure should be considered child abuse or neglect, (3) they have mixed attitudes about safe parenting and regular cannabis use, and (4) they support counseling from health care professionals about prenatal cannabis use.

Conclusions: AYAs were concerned about potential risks of prenatal cannabis exposure and want clinicians to counsel about cannabis use during pregnancy. More than one in three AYAs surveyed felt prenatal cannabis use should be classified as child abuse or neglect, in contrast to the declining perception of risk among pregnant people.

1. Introduction

Approximately 7 % of pregnant people use cannabis during pregnancy, with rates of use doubling between 2002 and 2017 (Volkow, Han, Compton, & McCance-Katz, 2019). Pre-pregnancy cannabis use is the largest risk factor for prenatal use, and 35.4 % of young adults ages 18–25 report cannabis use within the last year, a rate that is higher than other age groups (Key Substance Use and Mental Health Indicators in the United States, 2021; Skelton and Benjamin-Neelon, 2021; Skelton et al., 2020). Males are more likely to use cannabis than females, and paternal cannabis use is associated with maternal prenatal cannabis use (Carliner et al., 2017; El Marroun et al., 2008). Risks of prenatal cannabis exposure are not fully understood but include low birth weight, preterm delivery, small for gestational age, increased risk of NICU admission, and possible disruption to normal brain development (Marchand, Masoud, & Govindan, 2022). Due to these risks, the American College of Obstetricians and Gynecologists (ACOG), the Centers for Disease Control and Prevention (CDC), the American Academy of Pediatrics (AAP), and the American Academy of Family Physicians (AAFP) all recommend against prenatal cannabis use.

Cannabis is legal for medical use in 38 states and for recreational use for adults ages 21 and older in 23 states but remains federally classified

Abbreviations: ACOG, American College of Obstetricians and Gynecologists; CAPTA, Child Abuse Prevention and Treatment Act; CPS, Child Protective Services; HCP, Healthcare Professional; U.S, United States.

* Corresponding author at: Department of Family Medicine, University of Michigan, 207 Fletcher Street, Ann Arbor, MI 48109, USA.
E-mail address: cfrank@med.umich.edu (C.J. Frank).

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as a Schedule I controlled substance (State Medical Cannabis Laws, 2023). The federal Child Abuse Prevention and Treatment Act (CAPTA) requires states to have "policies and procedures … to address the needs of infants born and identified as being affected by illegal substance abuse or withdrawal symptoms resulting from prenatal drug exposure, including a requirement that health care providers involved in the delivery of such infants notify the child protective services system of the occurrence of such condition" (McCOURT, White, & Bandara, 2022). While CAPTA applies to prenatal cannabis use, the specific legal consequences of prenatal cannabis use vary by state and can depend on subtle interpretations of both federal and state statutes (Lloyd, Luczak, & Lew, 2019). In 37 states and the District of Columbia, state law requires health care professionals (HCPs) report suspected prenatal substance use, often triggering Child Protective Services (CPS) investigations for families of substance-exposed infants (McCOURT et al., 2022; Lloyd et al., 2019). Furthermore, 24 states have laws that classify prenatal drug use as child abuse or neglect (McCOURT et al., 2022). These policies can expose families of cannabis-exposed infants to surveillance, criminalization and termination of parental rights, and can amplify systemic racism that disproportionately harms Black, Hispanic, and Native American families within the child welfare system (Child Welfare Information Gateway, 2021; Thomas et al., 2023; Roberts, 2008; Neuspiel et al., 1993; Schoneich et al., 2023; Reddy et al., 2023).

Prior studies suggest that many HCPs feel unprepared to advise patients about the risks of cannabis use during pregnancy and are often unaware of state-specific legal consequences for prenatal cannabis exposure. Due to this lack of knowledge, they may focus counseling on legal consequences rather than health risks or may omit counseling altogether (Chasnoff et al., 2018; Woodruff et al., 2021; Holland et al., 2016; Holland et al., 2016; Panday et al., 2021; Jarlenski et al., 2019; Bayrampour et al., 2019). Perceived risk of cannabis use in pregnancy declined from 2015 to 2017 and among one cohort of adult and AYA pregnant people in the U.S., one fifth did not perceive any risk with weekly cannabis use in pregnancy, a perception that was even stronger among younger people (Odom, Cottler, Striley, & Lopez-Quintero, 2020). Cannabis use is increasing among AYAs and their perception of decreased risk is associated with use (Patrick et al., 2022; Parker and Anthony, 2018). Unlike our understanding of the knowledge and attitudes of HCPs, there are no recent studies that describe knowledge and attitudes of adolescents and young adults (AYAs) regarding the medical and legal consequences of cannabis use during pregnancy.

As cannabis legalization expands and use becomes more common, especially in AYAs, it is important to understand AYAs perspectives on prenatal cannabis use to guide communication recommendations regarding the medical and legal consequences of prenatal cannabis exposure. This study aims to explore AYA perspectives of prenatal cannabis use and elicit their preferences for counseling and education.

2. Methods

Our study utilized MyVoice, a longitudinal nationwide text-message polling platform for AYA aged 14 to 24 that aims to understand AYA opinions on a variety of health and policy issues (MyVoice, 2024). Because pre-pregnancy cannabis use is associated with increased risk of use in pregnancy, the MyVoice cohort provided an opportunity to understand the opinions of a demographic group with high rates of cannabis use and unintended pregnancy (Finer & Zolna, 2016).

MyVoice participants were recruited from social media to target national benchmarks set by the American Community Survey and earned $1 for responding to weekly survey questions (DeJonckheere, Nichols, & Moniz, 2017). In addition to age 14 to 24, inclusion criteria include English literacy and access to text-messaging on a phone. Demographic data were self-reported by participants upon initial consent and enrollment in MyVoice including age, race, ethnicity, gender identity, education level, and geographic region. The MyVoice cohort does not collect data on personal history of cannabis use, pregnancy, or parenting. This study followed survey reporting guidelines from the American Association for Public Opinion Research (AAPOR) (Pitt, Schwartz, & Chu, 2021). This study was approved by the University of Michigan institutional review board with a waiver of parental consent due to minimal risk to participants (HUM00210274).

We developed survey questions through an iterative process with input from AYAs involved in the MyVoice project, qualitative research experts, and physicians (including those with expertise in obstetrical care and addiction medicine). The survey was pre-tested with a sample group of MyVoice users to improve the clarity and focus of the questions. Based on pre-testing, we chose to use the term "marijuana" rather than "cannabis" to ensure the questions were well understood by the target audience (Table 2 and Table 3).

Five open-ended survey questions were distributed to all 826 actively enrolled participants in the MyVoice cohort via text message on May 27, 2022, and responses were collected through June 5, 2022. Survey questions were: (1) What do you think about the use of marijuana (smoking, edibles, etc.) during pregnancy? (2) What do you think are the risks of using marijuana during pregnancy? (3) Do you think healthcare providers should talk about marijuana use with people who are pregnant? Why or why not? (4) How do you think regular marijuana use (at least once per week) impacts a parent's ability to care for a child? (5) Do you think marijuana use during pregnancy should be considered child neglect or abuse? Why or why not? No additional context was provided to participants beyond the five open-ended survey questions.

Three investigators used a content analysis approach to review all text responses to each question, categorizing them into positive/yes, negative/no, and unsure/other categories, and then created codes and subcodes to represent patterns or themes describing the reason for the reply to each question. These codes were defined in a central codebook used by five investigators to compile data from text responses. Two independent investigators separately coded each question according to the codebook and then reconciled differences with a third researcher available to resolve any remaining coding discrepancies. Blank and unintelligible responses were omitted from the coding process. We report descriptive summary statistics to represent the positive, negative, and neutral content of responses to each question with representative responses, and we used a consensus approach to synthesize larger themes to describe the data (Hsieh & Shannon, 2005).

To explore variation in response by demographic characteristics we further analyzed code frequency for questions with categorical coded responses by age, gender, and the legal status of recreational cannabis in the respondents' state of residence using Pearson's Chi-Squared test. Analysis was conducted using SAS version 9.4 (SAS Institute Inc., Cary, NC) with a two-sided significance level of 0.05.

Of the 826 recipients, 666 responded to at least one question (80.6 % response rate). Respondents were not required to answer each question. Response rates for individual questions ranged from 79.2 % (654 of 826) to 67.7 % (559 of 826). The mean age of respondents was 19.9 years (SD = 2.3) and 63.2 % (421 of 666) were less than 21 years old and 36.8 % (245 of 666) were 21 years of age or older. Self-reported gender identities were 43.5 % (290 of 666) female, 41.9 % (279 of 666) male, 8.0 % (53 of 666) non-binary, 3.8 % (25 of 666) transgender male, 2.1 % (14 of 666) other (including genderfluid and agender), and 0.8 % (5 of 666) transgender female. Self-reported race was 64.5 % (429 of 666) White, 14.1 % (94 of 666) Asian, 10.8 % (72 of 666) Other (including Multiracial), 9.5 % (63 of 666) Black, 0.8 % (5 of 666) American Indian or Alaskan Native, and 0.3 % (2 of 666) Native Hawaiian or Other Pacific Islander. Self-reported ethnicity was 87.5 % (582 of 666) non-Hispanic and 12.5 % (83 of 666) Hispanic. States were categorized as permissive or non-permissive depending on the legal status of recreational cannabis at the time of the survey and 56.4 % (375 of 666) of respondents lived in permissive states and 43.6 % (290 of 666) lived in non-permissive states. There were no significant demographic differences between those who responded to the survey and those who did not (Table 1).

We identified four themes from responses: (1) AYAs believe cannabis

Table 1
Demographics.

Self-Reported demographic characteristic	Total	Responders	Non-responders
	N = 826	N = 666	N = 160
Age, mean (SD)	19.8 (2.3)	19.9 (2.3)	19.6 (2.4)
Age < 21	527 (63.8)	421 (63.2)	106 (66.3)
Age 21+	299 (36.2)	245 (36.8)	54 (33.8)
Gender, n (%)			
Female	363 (44.0)	290 (43.5)	73 (45.6)
Male	351 (42.5)	279 (41.9)	72 (45.0)
Non-binary	60 (7.3)	53 (8.0)	7 (4.4)
Transgender Male	28 (3.4)	25 (3.8)	3 (1.9)
Other[a]	17 (2.1)	14 (2.1)	3 (1.9)
Transgender Female	7 (0.9)	5 (0.8)	2 (1.3)
Race, n (%)			
White	514 (62.3)	429 (64.5)	85 (53.1)
Asian	125 (15.2)	94 (14.1)	31 (19.4)
Other[b]	91 (11.0)	72 (10.8)	19 (11.9)
Black or African American	87 (10.6)	63 (9.5)	24 (15.0)
American Indian or Alaskan Native	5 (0.6)	5 (0.8)	0 (0.0)
Native Hawaiian or Other Pacific Islander	3 (0.4)	2 (0.3)	1 (0.6)
Ethnicity, n (%)			
Non-Hispanic	719 (87.2)	582 (87.5)	137 (85.6)
Hispanic	106 (12.9)	83 (12.5)	23 (14.4)
Region, n (%)			
South	256 (31.0)	203 (30.5)	53 (33.1)
Midwest	236 (28.6)	196 (29.5)	40 (25.0)
West	177 (21.5)	141 (21.2)	36 (22.5)
Northeast	156 (18.9)	125 (18.8)	31 (19.4)
Cannabis legal status [c], n (%)			
Permissive	461 (55.9)	375 (56.4)	86 (53.8)
Non-permissive	364 (44.1)	290 (43.6)	74 (46.3)

[a]Includes genderfluid and agender
[b]Includes multiracial
[c]Determined by legal status of recreational cannabis by state at the time of survey. The complete list of states by category is in Supplemental Table S1

is harmful during pregnancy, (2) they are divided on whether prenatal cannabis exposure should be considered child abuse or neglect, (3) they have mixed attitudes about safe parenting and regular cannabis use, and (4) they support counseling from health care professionals about prenatal cannabis use (Table 2 and Table 3).

2.1. AYAs think cannabis use during pregnancy is harmful

Most respondents (74.2 %, 485 of 654) voiced general disapproval of cannabis use during pregnancy while only 3.1 % (20 of 654) expressed approval of the practice. As one respondent stated, "I don't think it's a good idea, it could affect development of the baby and cause complications." A minority (8.6 %, 56 of 654) indicated their opinion depended on other factors including the health risks associated with prenatal cannabis use, the amount or intensity of use, or the presence or absence of a healthcare professional's recommendation.

AYAs in our study were also asked to list any risks they perceived from prenatal cannabis use. The largest perceived risk was harm to the fetus (78.5 %, 483 of 615). As one respondent summarized the general risks, "I would imagine that the risks are similar to using other drugs

Table 2
Results.

Question 1: What do you think about the use of marijuana (smoking, edibles, etc.) during pregnancy? (n = 654)		
Theme	Respondents, No. (%)[a]	Example participant quote
Disapprove	**485 (74.2)**	"I don't think anything that alters your thinking should be used during pregnancy. Your body is already supercharged with changes."
Danger to fetus	103 (15.7)	"I don't think it's a good idea, it could affect development of the baby and cause complications."
Substance use concern	69 (10.6)	"Absolutely do not consume marijuana while pregnant, it can and will have adverse effects on the child, same as alcohol or any other drug."
Danger to parent	13 (2.0)	"I think anything that impairs judgment while pregnant isn't a great idea."
It Depends	**56 (8.6)**	"I think smoking should not be permitted but edible capsules should be."
Risk level	22 (3.4)	"If it doesn't harm the baby it's fine."
Intensity of use	17 (2.6)	"I think it's okay to use marijuana while pregnant in moderation"
Clinician recommendation	16 (2.4)	"I don't think it should be used during pregnancy unless a doctor recommends it."
I Don't Know	**88 (13.5)**	"I actually have never really learned anything about the subject, so I'm not sure."
Approve	**20 (3.1)**	"I think that the recent studies show that it causes little harm and I would rather have a pregnant person smoke something and be able to eat and function rather than suffer."
Question 2: What do you think are the risks of using marijuana during pregnancy? (n = 615)		
Harm to fetus	483 (78.5)	"I would imagine that the risks are similar to using other drugs during pregnancy, such as birth defects, the baby's brain chemistry being reliant on marijuana, increased risk of birth complications for the parent."
Birth defects	169 (27.5)	"It's not safe due to birth defects."
Growth issues	97 (15.8)	"The most obvious are potential health risks to the baby such as stunted growth."
Psychological development	69 (11.2)	"Impacting cognitive development of the baby. It does that in adults."
Harm to parent	47 (7.6)	"I think it could damage the parent as well as the child since it does affect one's health somewhat permanently."
Dependence/ Addiction	45 (7.3)	"Baby could be born with dependency on marijuana, there could be potential physical or mental effects."
Preterm labor	22 (3.6)	"Women could give birth to a baby with a low birth weight and/or give birth to a premature baby."
Miscarriage/ Stillbirth	21 (3.4)	"The baby can have development issues or a miscarriage could occur."
I don't know	112 (18.2)	"I don't know the exact risks."
No risks	13 (2.1)	"I don't think there are any risks."
Question 3: Do you think healthcare providers should talk about marijuana use with people who are pregnant? Why or why not? (n = 606)		
Yes	**543 (89.6)**	"Yes, because it's becoming more readily available and they speak about alcohol so they should do the same with marijuana."
Educate about risks	305 (50.3)	"Yes they probably should, the same way they talk to people about alcohol consumption and tobacco. If it has adverse effects like these do, then they should be talked about. Even if not,

(*continued on next page*)

Table 2 (*continued*)

Theme	Respondents, No. (%)[a]	Example participant quote
Question 1: What do you think about the use of marijuana (smoking, edibles, etc.) during pregnancy? (n = 654)		
		people should probably be educated on what marijuana could do to your body and your child.”
Advise against	35 (5.8)	“Yes, to make sure they don’t use it.”
It Depends	**32 (5.3)**	“If the healthcare provider thinks that it is best for that pregnant woman, then sure.”
No	**14 (2.3)**	“No, it’s the person carrying the baby’s responsibility to learn and educate what could or could not happen.”
I Don’t Know	**17 (2.8)**	“I am not sure because I do not know the effects that smoking could have on pregnant women.”

[a] Values may not add to 100 % because themes may not be mutually exclusive and some codes are not presented

during pregnancy, such as birth defects, the baby’s brain chemistry being reliant on marijuana, increased risk of birth complications for the parent.” Many respondents believed cannabis use during pregnancy could cause birth defects or physical deformities (27.5 %, 169 of 615), impair the child’s physical growth or stature (15.8 %, 97 of 615), interfere with the child’s psychological development (11.2 %, 69 of 615), lead to dependency or addiction (7.3 %, 45 of 615), or cause a miscarriage (3.4 %, 21 of 615).

2.2. AYA opinions are divided on considering cannabis use during pregnancy as child abuse or neglect

Among AYAs in our study, 35.2 % (210 of 596) felt that cannabis use during pregnancy should be considered child abuse or neglect, 24.8 % (148 of 596) did not think it should be classified as either abuse or neglect, and 26.0 % (155 of 596) indicated their response depended on a variety of factors including the intensity of cannabis use, the risks associated with prenatal use, the responsibility of the parent, the outcome of the pregnancy, and cannabis’s legal status.

Among those who believed that cannabis use in pregnancy should be considered child abuse or neglect, the primary reason reported was that cannabis exposure could harm the fetus (45.7 %, 98 of 210). 44 % of respondents lived in the 23 states that classify prenatal substance exposure as child abuse or neglect. One respondent’s shared their opinion – “Yes, it should absolutely be illegal and considered neglect. It puts babies at risk and can cause irreparable damage to fetuses.“ Among those who thought it should not be considered child maltreatment, the primary reasons included the medical uses of cannabis (11.5 %, 17 of 148), the importance of bodily autonomy (10.1 %, 15 of 148), and the role of addiction in cannabis use (4.1 %, 6 of 148). Some respondents who did not believe cannabis use should be considered child abuse or neglect compared it to tobacco and alcohol use in pregnancy as part of their reasoning (25.7 %, 38 of 148). As one respondent compared these risks, “If marijuana use during pregnancy was considered child neglect/abuse then smoking cigarettes, drinking alcohol, and all other activities harmful to a child would need to be considered as such as well which seems to be overkill.”

2.3. AYAs differ in their attitudes about how regular cannabis use affects parenting

About one-third of AYAs (37.9 %, 212 of 559) indicated regular cannabis use (at least once per week) could impair a parent’s ability to care for a child. Specifically, these respondents thought cannabis could distract parents (45.3 %, 96 of 212) or impair their judgment (35.4 %, 76 of 212). A similar proportion (35.6 %, 199 of 559) believed cannabis’s

Table 3
Results.

Question 4: How do you think regular marijuana use (at least once per week) impacts a parent’s ability to care for a child? (n = 559)		
Negatively	**212 (37.9)**	“It takes time from their kids and sets a bad example for the kids.”
Distracted	96 (17.2)	“I think it might affect how attentive the parents are when they are under the influence.”
Affects judgment	75 (13.4)	“I think it negatively impacts it. It impairs their thinking and judgment.”
Less motivated	13 (2.3)	“I believe marijuana is a demotivator, so I would believe the child might be not as well taken care of.”
Financial burden	15 (2.7)	“I think the parent would be less able to financially, physically and emotionally care for the child because of drug use.”
It Depends	**199 (35.6)**	“I think it depends. Regular (but not “excessive”) drinking is accepted as normal, so I wouldn’t say that marijuana use is necessarily any worse if taken responsibly. Parents should absolutely never smoke around their children.”
Situation	71 (12.7)	“I think that when the parent is high they aren’t in a good state for raising, watching and taking care of a child. I think it’s okay if there is another parent who is not under the influence who is able to care for the child while the other parents is using marijuana.”
Intensity of use	59 (10.6)	“I think it depends how much and how strong. If you’re taking so much that you’re unable to devout yourself to your child, that’s bad. But, if you take an amount similar to a glass or two of wine occasionally, you should be able to still properly parent.”
Responsibility of parent	49 (8.8)	“I think it depends on the individual. I think people can have a healthy relationship with marijuana, keep it away from the child, and be an amazing caregiver. I also think there’s the potential, like with every drug including alcohol, for the parent to use it too much or as an unhealthy coping mechanism which could impact the parent’s ability to give care.”
Positively	**16 (2.9)**	“I think it could help. Raising a child is a huge, stressful responsibility, and marijuana is usually used as a form of stress relief. I think any outlet that doesn’t harm the child or the parent(s) is a good outlet. Without the buildup of stress, the parent should be able to raise their child with a clearer head and have an easier time with the process.”
No Impact	**80 (14.3)**	“I personally don’t think it alone impacts much in a parent. I’ve known wonderful parents who smoke and horrible ones who don’t.”
I Don’t Know	**52 (9.3)**	“Honestly, I don’t know. It’s a question of safety and if they can be fully present for their child.”
Question 5: Do you think marijuana use during pregnancy should be considered child neglect or abuse? Why or why not? (n = 596)		
Yes	**210 (35.2)**	“Yes, it can lead to issues that would likely not otherwise occur.”
Harms fetus	98 (16.4)	“Yes, it should absolutely be illegal and considered neglect. It puts babies at risk and can cause irreparable damage to fetuses.”
It Depends	**155 (26.0)**	“If marijuana has effects on an unborn child and a parent knowingly and intentionally uses marijuana while pregnant, I feel like this could be considered child abuse. However, I feel like this would create consequences for parents who use marijuana while pregnant but don’t know that they’re pregnant yet.”
Risks	70 (11.7)	“If it is harmful in ways similar to alcohol use, then yes. If not, then no.”
Outcome	22 (3.7)	“If it causes damage to the fetus then yes, because they are willingly endangering their child.”
Intensity of use	20 (3.4)	“It depends, I think if the parent is abusing marijuana then yes it would be child neglect but if the parent is using it for their health and are being very responsible then no.”

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Table 3 (*continued*)

Question 4: How do you think regular marijuana use (at least once per week) impacts a parent's ability to care for a child? (n = 559)		
Other substance	17 (2.9)	"I'm not sure. It would be equal to the neglect from using alcohol or other dangerous substances during pregnancy."
Legality	9 (1.5)	"If it's in a legal state and the parenting is not affected, absolutely not. If it's not legal and parenting is not affected, I think they should be warned about possible risks, but not considered neglect or abuse."
No	**148 (24.8)**	"I think marijuana use during pregnancy should not be considered child neglect/abuse but I think it's not smart because you don't know how it will affect your child."
Medical use	17 (2.9)	"No, it is so highly context dependent. Medical marijuana use, for example, may be what enables a chronically ill person to stay active during pregnancy. There may also be some cases where the fetus could arguably be considered abused, but that designation should not be solely based on a vague idea that someone uses marijuana."
Smoking	15 (2.5)	"If marijuana use during pregnancy was considered child neglect/abuse then smoking cigarettes, drinking alcohol, and all other activities harmful to a child would need to be considered as such as well which seems to be overkill."
Alcohol	23 (4.4)	"No because drinking alcohol while pregnant is discouraged but not considered child neglect/ abuse."
Addiction	6 (1.0)	"No. Addiction is not easy to beat and many people are addicted especially without proper support."
Bodily autonomy	15 (2.5)	"No, because women should be allowed to do whatever they want with their own body even while pregnant."
I Don't Know	**83 (13.9)**	"I'm not sure what legal label should be associated with marijuana use while pregnant."

[a] Values may not add to 100 % because themes may not be mutually exclusive, and some codes are not presented

impact on parenting would depend on other factors including the parent's level of responsibility, their intensity of use, or the time and place in which the use occurred. Only 2.9 % (16 of 559) thought regular cannabis use could improve the ability to care for a child.

2.4. AYAs want healthcare professionals to talk to pregnant people about cannabis

Among the AYAs in our study, 89.6 % (543 of 606) felt HCPs should discuss cannabis use with patients who are pregnant. More than half of those (56.2 %, 305 of 543) further emphasized the importance of education about the risks of cannabis use during these discussions. As one respondent contextualized, "Yes they probably should, the same way they talk to people about alcohol consumption and tobacco. If it has adverse effects like these do, then they should be talked about. Even if not, people should probably be educated on what marijuana could do to your body and your child." A small subset of respondents thought conversations should depend on the situation and/or the actual risks associated with use (5.3 %, 32 of 606).

In an exploratory analysis, views do not appear to differ by respondent age or cannabis legal status by the state of respondent residence, but male respondents appear to more strongly disapprove of cannabis use during pregnancy, feel that regular cannabis use is more likely to negatively impact the ability to care for a child, and are more likely to think that cannabis use during pregnancy should be considered child neglect or abuse (Table S1).

3. Discussion

The main contribution of this paper is the characterization of AYA perspectives on prenatal and parental cannabis use. Most AYAs who responded to this survey believe cannabis is harmful during pregnancy due to risk to the fetus. AYAs are divided on whether cannabis use during pregnancy should be considered child abuse or neglect and whether regular cannabis use impairs parenting. AYAs in this cohort felt HCPs should discuss prenatal cannabis use with patients who are pregnant. These findings are important to inform health care professional education and strategies for communication because young age, pre-pregnancy use, perception of risk, and partner use are all associated with use during pregnancy.

Prior studies of pregnant adults have demonstrated a lack of understanding of the medical risks of prenatal cannabis use, and a lack of clear counseling information from clinicians (Chang, Tarr, & Holland, 2019). Our work extend these findings to AYA, who are concerned about the medical risks of prenatal cannabis use, yet uncertain about the details (Panday, Taneja, & Popoola, 2021). While a recent meta-analysis found inconsistent evidence to support a relationship between prenatal cannabis use and congenital malformations (Delker et al., 2023), AYAs in our study tended to overemphasize this risk and were much less likely to mention other adverse neonatal outcomes like birth weight less than 2500 g that have stronger evidence (Marchand et al., 2022). In contrast to the general trend of declining perception of risk of cannabis use among pregnant people, most AYAs in our study are concerned about the potential for harm and almost all support the importance of education from clinicians (Odom et al., 2020; Jarlenski et al., 2017). This survey focused on a general AYA population, but it would be interesting to compare this general population with a cohort of AYA with personal experience of pregnancy and parenting.

ACOG and the Substance Abuse and Mental Health Services Administration (SAMHSA) recommend HCPs initiate discussions about the risks of prenatal cannabis use with pregnant patients (Holland et al., 2016; Committee Opinion No, 2017; Substance Abuse and Mental Health Services Administration (SAMHSA), 2019). Patients do not always view HCPs as helpful or trusted resources for making decisions about cannabis use during pregnancy (Vanstone, Panday, & Popoola, 2022). Prior studies have demonstrated vague counseling and clinician uncertainty about health risks in clinician counseling regarding cannabis use in pregnancy (Holland, Rubio, & Rodriguez, 2016). More than a third of pregnant people reported that their clinician did not ask about cannabis use and almost two-thirds were not advised against cannabis use in a recent study, but this cohort consisted mostly of adults and not AYA (Skelton, Nyarko, & Benjamin-Neelon, 2023). HCPs should be reassured by our findings which suggest AYAs want them to address the potential harms of prenatal cannabis exposure despite the uncertain risks. Prior studies suggest that patient decision-making regarding cannabis use in pregnancy involves a complicated balance of perceived benefits versus uncertain risks (Panday et al., 2021). Researchers may want to consider these results when evaluating educational interventions designed to provide information about the risks of prenatal cannabis to AYAs.

Legalization of cannabis use in many parts of the U.S. has exposed the contrasting risks of prenatal cannabis use and prenatal tobacco use. Use of both cannabis and tobacco can pose harms in pregnancy but only cannabis use risks referral to the child welfare system. Because our sample included AYAs from 48 different states with varying approaches to cannabis regulation, we were not able to perform a statistically robust subgroup analysis of differences in perception based on state classification, but in exploratory analysis we did not identify any significant differences in attitudes between respondents from permissive vs non-permissive states. Fear of punitive action such as CPS reporting for child abuse and neglect can prevent patient disclosure of cannabis use even though cannabis use disorders in pregnancy are treatable (Groff et al., 2023). Our study reinforces the need for clinicians to understand

the often subtle interpretation of their state laws regarding substance use and child abuse and neglect and include accurate information about legal risks into clinical conversations, especially when disclosures about substance use in pregnancy may impact the legal risk to pregnancy, birthing parents and families (Doing Right at Birth, 2023). In addition, our findings support an opportunity to incorporate pregnancy related risks alongside other education about risks of cannabis use into public health and community-based cannabis prevention programs focused on pregnancy-capable AYA (Substance Abuse and Mental Health Services Administration (SAMHSA), 2021).

The strengths of this study include a high response rate (80.6 %), a diverse geographic sample of U.S. AYAs, and the qualitative text message responses obtained through the MyVoice platform. This study has several limitations. Response to MyVoice survey questions is voluntary, respondents are not required to answer all questions, and we do now know how these findings would compare to other age groups. Participants who chose not to respond may have different attitudes toward cannabis use in pregnancy, and like other surveys, the specific wording of questions may impact the content of responses. The MyVoice cohort does not collect data on personal history of cannabis use, pregnancy or parenting, so this study is unable to assess the influence of these characteristics on participants' responses (Miech, Johnston, & O'Malley, 2017). Finally, MyVoice does not consist of a nationally representative sample of U.S. AYAs which prevents robust subgroup analyses by state cannabis legalization status, and there is unmeasured error associated with all forms of public opinion research.

4. Conclusions

Given the declining perception of risk of cannabis use among pregnant people we found it surprising that more than 1 in 3 AYA respondents felt prenatal cannabis use should be considered child abuse or neglect. The AYAs in this study want HCPs to counsel pregnant people about cannabis use and its potential risks to fetal development. These results support HCPs prioritizing open communication about cannabis use and risks in pregnancy.

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CRediT authorship contribution statement

Christopher Whitlock: Writing – original draft, Formal analysis, Conceptualization. **Claire Chang:** Writing – review & editing, Formal analysis, Data curation. **Regina Onishchenko:** Writing – review & editing, Formal analysis, Data curation, Conceptualization. **Madgean Joassaint:** Investigation, Formal analysis, Data curation. **Emily Madlambayan:** Investigation, Formal analysis, Data curation. **Lauren Oshman:** Writing – review & editing, Writing – original draft, Formal analysis, Conceptualization. **Christopher J. Frank:** Writing – review & editing, Writing – original draft, Supervision, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.addbeh.2024.108059.

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