Review Article

Women's perspectives about cannabis use during pregnancy and the postpartum period: An integrative review☆

Hamideh Bayrampour[a,*], Mike Zahradnik[b], Sarka Lisonkova[c], Patti Janssen[c]

[a] Department of Family Practice, Midwifery Program, University of British Columbia, Suite 320 - 5950 University Boulevard, Vancouver, BC V6T 1Z3, Canada
[b] University of British Columbia, Suite 320 - 5950 University Boulevard, Vancouver, BC V6T 1Z3, Canada
[c] University of British Columbia, Vancouver, BC, Canada

ABSTRACT

Cannabis is the most commonly used illicit drug among general and pregnant populations. Despite recommendations to abstain from cannabis use, its use is increasing during the perinatal period. In this integrative review, we aim to understand women's perspectives about the health aspects of perinatal cannabis use. The following databases were searched: MEDLINE, PsycInfo, EMBASE, and CINAHL. We included quantitative and qualitative studies with a primary focus on perinatal cannabis use. The methodological quality of the included studies was appraised using appropriate checklists. Extracted data were integrated into a single data matrix and iteratively compared across studies to summarize and synthesize the data. Full text of 33 citations was retrieved and reviewed of which 6 studies met the inclusion criteria. Women who continued to use cannabis during pregnancy often perceived no general or pregnancy-specific risk compared to nonusers. The uncertainty regarding adverse perinatal consequences, its perceived therapeutic effects, and lower costs of cannabis compared to that of cigarettes contributed to cannabis use. A lack of communication with health care providers regarding the health aspects of cannabis was evident. Women perceived this lack of counseling as an indication that adverse outcomes associated with cannabis use are not significant. Women's perceptions of health risks associated with cannabis use are important factors in the decision-making process regarding use or cessation, particularly as legal concerns are fading away. A discussion about health concerns surrounding cannabis use may influence women's perceptions of risk and help them to make informed choices.

1. Introduction

Cannabis (marijuana) is the most commonly used illicit drug among general (United Nations, 2018) and pregnant populations (Schauberger et al., 2014; Metz and Stickrath, 2015). The relationship between cannabis use and adverse perinatal outcomes is controversial. While some studies have shown increased risk of adverse outcomes, such as anemia, low birth weight (LBW) (Gunn et al., 2016), stillbirth (Varner et al., 2014), and newborn intensive care unit (NICU) admission (Gunn et al., 2016) with cannabis use, others have attributed observed associations to confounding factors, including socioeconomic characteristics, smoking, alcohol and other illicit drug use (Conner et al., 2016). More recent evidence supports independent associations between cannabis use and adverse perinatal outcomes: A 2018 observational study showed that controlling for tobacco use and demographic profiles such

as age, ethnicity, and level of education, cannabis use at any time during pregnancy was associated with a 50% increased risk of LBW (Crume et al., 2018). Another recent study reported a 3-fold increase in the risk of neonatal morbidity or death after adjustment for ethnicity, tobacco and other illicit drug use (Metz et al., 2017).

Due to the potential adverse consequences, professional organizations recommend discontinuing use of cannabis during preconception, pregnancy, and lactation (American College of Obstetricians and Gynecologists Committee on Obstetric Practice, 2015). However, cannabis use is increasing among women of reproductive ages, including pregnant women. Based on the US National Survey on Drug Use and Health report, between 2002 and 2014, cannabis use among the pregnant population increased 62%, from 2.37% to 3.85% (Brown et al., 2017). While reasons for such increases are yet to be understood, studies have shown that this growing trend is concurrent with increased

perception of cannabis safety. Compared to the past, more individuals today consider this illicit substance to be safe (Jarlenski et al., 2017). In fact, some maternity care providers report that women often do not perceive cannabis as a "drug" (Holland et al., 2016). Legalization movements across the globe may have also contributed to these trends (Crume et al., 2018; Mark et al., 2017). As more jurisdictions globally introduce legalization of cannabis, understanding women's perceptions about perinatal cannabis use is invaluable to inform targeted public health interventions and increase awareness regarding health concerns surrounding cannabis use. Several reviews have focused on the health impact of cannabis use during perinatal period; no review to our knowledge has explored women's perspectives about health concerns of cannabis use and how these perceptions contribute to cannabis use or cessation during this period. In this review, we aim to identify and synthesize current evidence to answer our review question: What are women's perspectives on the health aspects of cannabis use, and how do these perceptions influence decision-making about cannabis use during the perinatal period?

2. Methods

We conducted an integrative review using a methodology developed by Whittemore and Knafl (2005). Integrative reviews combine studies with various methodologies and enable the synthesis of diverse perspectives. This inclusive approach provides a comprehensive understanding of a particular healthcare phenomenon or problem to inform practice and policy (Whittemore & Knafl, 2005). In this integrative review, we included quantitative and qualitative studies with a primary focus on cannabis use during the perinatal period that investigated pregnant or postpartum individuals' knowledge, perceptions and perspectives about cannabis use. We searched the following databases from their inception through May 2018: MEDLINE, PsycInfo, EMBASE, and CINAHL. Appendix A presents the full list of keywords and search strategies. Search terms were made broad and inclusive to account for variations in electronic databases. We also manually searched the reference lists of the retrieved articles for additional citations. We did not retrieve gray literature or non-English studies. Studies with mixed populations (i.e., pregnant/postpartum and nonpregnant/postpartum) were included.

2.1. Data extraction and analysis

Citations from each literature search were imported into the reference manager software EndNote. After duplications were removed, two reviewers independently screened the titles and abstracts of the articles to determine their relevance and whether they met the inclusion criteria. Disagreements were discussed to reach a consensus. The full texts of relevant articles, or articles for which relevance could not be ascertained by the title and abstract screening, were retrieved and reviewed to determine eligibility. For each included study, two reviewers independently extracted the following data: study design, aim of study, sample description, timing of cannabis use (prenatal, postnatal, or perinatal), and study findings. Extracted data regarding findings were categorized as follows: prevalence and patterns of cannabis use, risk factors for cannabis use, perceptions about health impact and adverse outcomes of cannabis use, and reasons for continuation/cessation of cannabis use during the perinatal period. The data extracted by each reviewer were integrated into a single data matrix. Following methodology developed by Whittemore and Knafl (2005), the data matrix was iteratively compared to each category of findings across studies to summarize and synthesize the data. Synthesized data were then reviewed to verify congruency of interpretations with the primary data sources.

2.2. Quality appraisal

The quality and relevance of the included studies were independently appraised by two reviewers. The Joanna Briggs Institute's Critical Appraisal Checklist for Analytical Cross-Sectional Studies (Moola et al., 2017) was used to assess cross-sectional quantitative studies. One additional criterion for sample representativeness was added to this 8-item checklist, and the overall quality was rated as low, moderate or high. The Critical Appraisal Skills Programme (CASP) tool (CASP, 2017) was used to appraise qualitative studies.

3. Findings

A total of 1798 articles were retrieved. After accounting for duplication, titles and abstracts of 1478 references were independently screened by two reviewers. The full text was retrieved and reviewed for 33 of the citations. Six studies met the inclusion criteria and were included in the review. Fig. 1 depicts the search and selection process using a PRISMA flow diagram (Moher et al., 2009). The main reasons for exclusion were not addressing review objectives, focusing on other substances, and focusing on nonpregnant/postpartum populations. All included studies were conducted in the United States. Five studies were quantitative, and one study was qualitative. All studies examined women's perceptions during pregnancy. Three studies used a nationally representative sample. One study recruited pregnant participants from a prenatal care clinic, and two studies included women with a known history of substance use (Table 1). In the methodological quality appraisal, two studies ranked high, and four studies ranked moderate. The overall quality ratings for the individual studies are presented in Table 1.

The prevalence of cannabis use during pregnancy varied substantially across the included studies. The rates of past-month and past 2–12 months use in a large population-based study were 3.9% and 7%, respectively (Ko et al., 2015). Higher prevalence rates were reported among populations with lower socioeconomic status and among ethnic minorities. For example, in a sample consisting mainly of African-American young women (mean age 25.9 years), the prevalence of cannabis use anytime during pregnancy was 11% (Mark et al., 2017). Similarly, self-report rates for past three weeks and past 3 months among another sample of largely African-American women were 4% and 11%, respectively. In this study, the rates of use within the last three months increased to 28% when hair and urine samples were also analyzed (Beatty et al., 2012).

Cannabis users were more likely to be younger (< 25 years), unemployed, single or uninsured, non-Hispanic African-American and to have low income and education (Mark et al., 2017; Ko et al., 2015; Beatty et al., 2012). Among demographic factors, marital status appeared to be more significant in predicting antenatal cannabis use. Oh et al. (2017) reported that controlling for age, sex, ethnicity, family income, and health insurance, the prevalence of past-month cannabis use among unmarried pregnant women increased significantly from 5.4% in 2005 to 10.0% in 2014. Such increases were not observed among married women (Oh et al., 2017). Poor mental health (i.e., a diagnosis of anxiety or depression) was also associated with cannabis use (Oh et al., 2017). Multisubstance use was another risk factor for prenatal cannabis use. Mark et al. (2017) reported that compared to those who quit, women who continued cannabis use during pregnancy were more likely to have ever smoked cigarettes (78% vs. 54%) or be current smokers (53% vs. 14%). Findings of Ko et al. (2015) suggested that these associations might be independent from sociodemographic characteristics. They reported that controlling for sociodemographic profiles, pregnant tobacco smokers and alcohol and other illicit drug users were 2–3 times more likely to use cannabis in the past year than were nonusers (Ko et al., 2015).
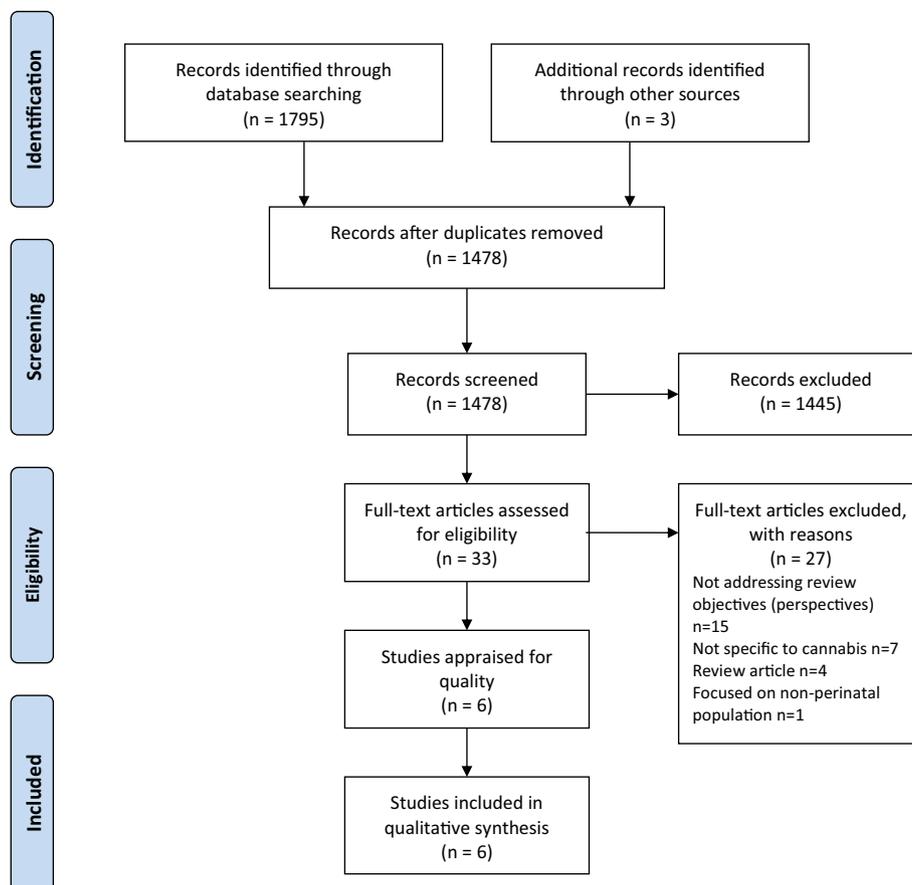
Fig. 1. Flow diagram of study selection for the review.

3.1. Pattern and reasons to use

Cannabis use rates were highest during the first trimester (7.4%) and lowest during the third trimester (1.8%) (Ko et al., 2015). A majority of pregnant users (96%) reported treating nausea early in pregnancy as their motivation to use this substance. Thirty-one percent of women who quit later in pregnancy reported using cannabis early in the pregnancy to treat nausea (Mark et al., 2017). Women commonly reported quitting cannabis or decreasing frequency/quantity of use after realizing that they were pregnant. In a sample of 306 pregnant women attending an outpatient prenatal clinic, 35% reported being "current users" at the time that they realized being pregnant. Two-thirds of these women quit after pregnancy confirmation (Mark et al., 2017). Among women who continued use during pregnancy, half reported using cannabis almost daily or twice a week. Eighteen percent of pregnant users in this study met the DSM-IV criteria for cannabis abuse/dependence (Ko et al., 2015).

3.2. Perception of harm

3.2.1. General harm

Three articles sought to ascertain pregnant women's perceptions about risk of cannabis use in general using the following single question: "How much do people risk harming themselves physically and in other ways when they smoke marijuana once or twice a week?" (Jarlenski et al., 2017; Ko et al., 2015; Oh et al., 2017) Seventy percent of both pregnant and nonpregnant past-year cannabis users perceived slight or no risk of harm from using cannabis (Ko et al., 2015). A decreasing trend for the general perception of risk related to cannabis use was evident: Controlling for sociodemographic factors, Oh et al. reported significant decreasing risk perception related to cannabis use

and increasing social acceptability among both users and nonusers (Oh et al., 2017). Among users, the average predicted probability of reporting no general risk associated with regular cannabis use increased from 25.8% in 2005 to 65.4% in 2015. Similar increases were reported among nonusers, rising from 3.5% in 2005 to 16.5% in 2015 (Jarlenski et al., 2017).

3.2.2. Specific harm to pregnancy and infant

Three studies examined specific perceptions about perinatal health risk associated with cannabis use. Beatty et al. assessed women's perceptions using 4 questions: They asked women: to identify the first and second most harmful substance (to the fetus) during pregnancy; to rate each substance separately using ordinal ratings on a scale of 1 (not dangerous at all) to 10 (extremely dangerous); to identify safe amount of cannabis and tobacco to be used while pregnant (separate questions); and to respond (yes or no) to the question "I know people who believe that smoking cigarettes/smoking marijuana/drinking alcohol while pregnant is really not very dangerous for the baby" in order to assess community perceptions.

Mark et al. (2017) asked their participants to report frequency and quantity of cannabis use prior to and during pregnancy, intention to use during the remainder of the pregnancy, intention to use during the postpartum period, motivation to quit and knowledge of the harms of cannabis use during pregnancy. Jarlenski et al. (2016) conducted qualitative interviews to explore women's perceptions regarding usefulness of available information about perinatal cannabis use.

In the Mark et al. (2017) study, 30% of pregnant women responding to an anonymous survey responded "no" when asked "do you believe marijuana is harmful to a baby during pregnancy?". In another study, all substances, including cannabis, were rated as highly dangerous (Beatty et al., 2012). However, when women were asked to select the

Table 1
Characteristics of included studies.

Authors, year, state, country	Design	Setting	Sample size and characteristics	Study objectives	Cannabis perceived risk assessment	Prevalence	Characteristics of users	Quality
Beatty et al. (2012), Detroit, MI, US	Cross-sectional	Postpartum unit in hospital	100 (study 1) and 50 (study 2) low-income African-American immediately postpartum women who reported either illicit drug use or binge drinking in the month prior to pregnancy, or reported smoking ten or more cigarettes/day	To examine prevalence of cannabis use and explore perceived risk and monetary cost of cannabis versus tobacco use	• Identification of the first and second most harmful (to the fetus) substance of abuse during pregnancy • Ordinal ratings on a 1 (not dangerous at all) to 10 (extremely dangerous) scale for each substance of abuse • Questions about safe amount of cannabis and tobacco to be used while pregnant • "I know people who believe that (smoking marijuana) while pregnant is really not very dangerous for the baby," yes or no response	Study 1: 4% past three weeks; 11% past 3 months	Younger, less likely to have graduated high school, and more likely to be receiving public assistance	Moderate
Jarlenski et al. (2017), US	Time-trend analysis of cross-sectional data	National Survey on Drug Use and Health data from 2005 through 2015	Women aged 18–44 years who were pregnant (unweighted n = 8713) or nonpregnant (unweighted n = 161,902)	To examine time trends in the perception of the risk of regular cannabis use among US pregnant and nonpregnant reproductive-age women	General risk: "How much do people risk harming themselves physically and in other ways when they smoke marijuana once or twice a week?"	NR (not reported)	NR	Moderate
Jarlenski et al. (2016), Pennsylvania, US	Qualitative study	Five clinical settings in the Pittsburgh area	26 pregnant women who either reported or tested positive for cannabis use	To understand women's information-seeking patterns and perceptions of usefulness of available information about perinatal cannabis use	Open-ended interview questions	–	Majority were younger than 30, African American, and low-income, one-half of the women were single	Moderate
Ko et al., 2015, US	Time-trend analysis of cross-sectional data	National Survey on Drug Use and Health data from 2002 through 2012	Pregnant (n = 4971) and nonpregnant (n = 88,402) women 18–44 years of age	To examine national prevalence, patterns, and correlates of cannabis use in the past month and past 2–12 months among women of reproductive age by pregnancy status	General risk: "How much do people risk harming themselves physically and in other ways when they smoke marijuana once or twice a week?"	3.9% of pregnant women used marijuana in the past month, and 7.0% used it in the past 2–12 months	18–25 years of age, unemployed, earned less than $20,000 annually, and never married, uninsured, non-Hispanic African American, tobacco smokers, alcohol users, and other illicit drug users	High
Mark et al., 2017, Maryland, US	Cross-sectional	An outpatient prenatal clinic at the University of Maryland Medical Center in Baltimore between 2015 and 2016	306 pregnant women, younger women (M: 25.9 years) and 81% African-American	To examine patterns of cannabis use during pregnancy and attitudes toward legalization and knowledge of potential harms	Knowledge of the harms of cannabis use in pregnancy	35% prior to pregnancy; 11% during pregnancy	Users were more likely to have ever used cigarettes and to be current smokers and less likely to have graduated from high school	Moderate
Oh et al. (2017), US	Time-trend analysis of cross-sectional data	National Survey on Drug Use and Health data from 2005 through 2014	3640 married and 3987 unmarried pregnant women	To examine trends and correlates of prenatal cannabis use and the effect of risk/protective factors on cannabis use trends	General risk: "How much do people risk harming themselves physically and in other ways when they smoke marijuana once or twice a week?"	From 2005 to 2014, cannabis use prevalence among unmarried pregnant women increased from 5.4% to 10.0%. The prevalence among married pregnant women remained stable and under 1.5%	Unmarried, depression and anxiety	High

substance most likely to harm the baby during pregnancy, 70% chose alcohol, 16% chose tobacco, and only 2% chose cannabis. Eighty-six percent of participants indicated that there is no safe amount of either tobacco or marijuana use during pregnancy. Compared to tobacco, however, significantly more women reported a safe amount for cannabis. In qualitative interviews, Jarlenski et al. reported that, the overall impression of the participants was that cannabis use might introduce health risks in pregnancy. However, there were uncertainties about specific impact. Participants also perceived a lack of information about explicit harms to the fetus. Statements such as "exact effects of prenatal marijuana use are unknown" were commonly reported (Jarlenski et al., 2016). Regarding community perceptions, 76% of women reported knowing individuals who felt the use of cannabis antenatally was not very harmful for the baby (Beatty et al., 2012). Only one study examined women's perceptions about cannabis legalization. In this study, lifetime users and those who continued to use cannabis during pregnancy were more likely than those who never used cannabis, and those who quit during pregnancy, to believe that cannabis should be legalized. These participants were also more likely to report that they would use cannabis more in general if it were legal (Mark et al., 2017).

There were differences in the perception of cannabis risk among pregnant women who quit and those who continued to use. Women who continued to use cannabis prenatally were less likely to believe that cannabis could be harmful during pregnancy than were those who quit (26% vs. 75%, respectively). Seventy-two percent of women who quit or cut back reported that they quit specifically due to their pregnancy (Mark et al., 2017). Women who completely quit during pregnancy were more likely to believe that cannabis could harm pregnancy (74% vs. 39%, respectively) or cause long-term harm to their babies (67% vs. 31%) than were those who continued to use (Mark et al., 2017). Similarly, in qualitative interviews, women reported that their decisions about perinatal cannabis use were largely focused on the health of the baby (Jarlenski et al., 2016). Other reported reasons for quitting or cutting back on use included avoiding being a bad example, avoiding child welfare services interventions and saving money (Mark et al., 2017). Nearly half of the pregnant women with low socioeconomic status perceived that using cannabis was less expensive than smoking cigarettes was (Beatty et al., 2012).

Women identified the Internet as the main source of information about health aspects of cannabis use. They reported that communications with health care providers were focused on child welfare agencies' potential involvement after delivery and legal consequences of cannabis use. Some stated not receiving adequate information about the risks of cannabis use, or how to quit, from their providers, even when they actively sought support (Jarlenski et al., 2016). Some women perceived that not communicating and addressing cannabis health risk during pregnancy by the maternity care providers or social workers, or not having specific counseling provided, might indicate that cannabis does not represent a significant concern for the outcome of their pregnancy (Jarlenski et al., 2016).

4. Discussion

In this review of the literature, we studied women's perspectives about cannabis use during the perinatal period and the motives of women to continue or discontinue use. Based on the findings, the perception that regular cannabis use does no harm in general has increased 3-fold from 2005 to 2015, among both pregnant and nonpregnant women (Jarlenski et al., 2017). Regarding harm specific to the perinatal period, while most pregnant women acknowledged that cannabis could be harmful for the pregnancy and the fetus, a substantial minority did not recognize its potential harms. For instance, 30% of pregnant women attending a prenatal care clinic reported that they do not believe that cannabis is harmful to their fetus (Mark et al., 2017). We also found that, compared to nonusers, women who continued to use cannabis

during pregnancy often perceive no general risk (Jarlenski et al., 2017) or specific risk to pregnancy (Mark et al., 2017). The evidence on the impact of cannabis use on perinatal outcomes is controversial (Crume et al., 2018; Gunn et al., 2016; Conner et al., 2016; Metz et al., 2017). In a systematic review, Conner et al. (2016) reported increased risk of LBW (RR 1.43, 95% CI 1.27–1.62) and preterm delivery (RR 1.32, 95% CI 1.14–1.54) with prenatal cannabis use. However, these associations became nonsignificant after adjustment for confounding factors (Conner et al., 2016). In another systematic review of 24 studies, Gunn concluded that the effects of cannabis on maternal and fetal outcomes remain uncertain (Gunn et al., 2016). However, more recently published evidence suggests independent associations between cannabis and adverse outcomes (Crume et al., 2018; Metz et al., 2017). In this era of uncertainty about exact adverse outcomes and magnitude of the risk, this substance may be perceived "safer" compared to substances with more established evidence regarding adverse effects. Some have even argued that in the current environment of the opioid epidemic, where cannabis legalization has been pursued as an approach to decrease opioid fatalities, cannabis may have been viewed as a safe alternative to opioids (Jansson et al., 2018). In this review, participants in the Jarlenski study stated that information about the effect of cigarette smoking on fetal development and infant health was clear, whereas such information about the effects of cannabis is contradictory (Jarlenski et al., 2016). While participants in the Beatty study perceived all substances, including cannabis, as highly dangerous, when forced to select the substance most likely to harm the baby among tobacco, alcohol and cannabis, only 2% chose cannabis. Women were also more likely to identify a safe amount of use for cannabis compared to that for tobacco. Based on findings of this review, the uncertain perinatal consequences associated with cannabis use (Jarlenski et al., 2016), perceived therapeutic effects of cannabis for morning sickness (Mark et al., 2017), and lower costs of cannabis compared to that of cigarettes (Beatty et al., 2012) may have contributed to cannabis use during pregnancy. Likewise, Mark et al. (2017) identified three strong motivators to quit cannabis during pregnancy including a belief that it can harm pregnancy, a belief that it can cause long-term harm for the baby and saving money. Another strong motivator to quit cannabis was an intention to set a good example as a parent (Jarlenski et al., 2016). Morrison et al. (1998) found that some pregnant adolescent participants, despite understanding that this substance may be harmful to their pregnancy, continued to use for reasons such as a way to "fit in" better with peers, forget problems and alleviate worry and feel relaxed (Morrison et al., 1998). Oh et al. (2017) reported that women with poor mental health and no partner are at higher risk for cannabis use during pregnancy. Young, unmarried low-income women and multisubstance users were also more likely to continue cannabis use during pregnancy (Mark et al., 2017; Ko et al., 2015). It is possible that socially disadvantaged women with mental health struggles and no partner consider use of this substance as a less expensive and potentially safer coping mechanism compared to that of other substances during pregnancy. Future studies focused on this topic are required to examine these propositions.

Women reported the need for resources to understand specific effects of cannabis on the fetus as well as improved communication regarding this substance with health care providers (Jarlenski et al., 2016). Most women reported not receiving counseling about cannabis use from their providers. Others stated that consultations regarding cannabis use were focused on legal consequences rather than health impacts (Jarlenski et al., 2016). Studies have shown that in the absence of robust evidence in this area, health care providers may feel uncomfortable presenting and discussing evidence (Holland et al., 2016; Brooks et al., 2017). In this review, not offering consultation or providing educational information and specific recommendations during routine prenatal care visits were perceived as adverse outcomes associated with cannabis use are not significant (Jarlenski et al., 2016). There is evidence that if there is patient uncertainty about the level of

vulnerability, health care providers' opinions play a significant role in shaping women's perceptions of risk, as well as their understanding and assessment of the threat during pregnancy. For example, in a qualitative study, pregnant women at advanced maternal age (≥35 years) reported that not having major discussions with their health care providers regarding health risks associated with age gave these women an impression that there were no serious pregnancy risks related to age (Bayrampour et al., 2012).

Some providers also reported that due to conflicting reports of evidence, they emphasize legal consequences as a strategy to motivate women to quit (Holland et al., 2016). Women reported legality concerns as an important motivation to quit cannabis during pregnancy (Mark et al., 2017). However, shifting legal environment, increased social acceptability and perceived safety of this substance might decrease the weight of this motivational factor in the quitting decision. While evidence on the impact of legalization on perinatal cannabis use is scarce, some data have shown higher tetrahydrocannabinol (THC) levels in the positive meconium samples post-legalization, compared to pre-legalization, suggesting an increase in cannabis potency, frequency of use, or availability of edible cannabis (Jones et al., 2015). Additionally, higher rates for cannabis use during pregnancy have been reported in states with legalized cannabis compared to those of national estimates (Crume et al., 2018). In a study conducted in the state of Maryland, 10% of all pregnant women and 17% of lifetime users stated that they would smoke cannabis more during pregnancy if legalized, and more than half of pregnant current users (62%) indicated that they would increase use during pregnancy if legalized (Mark et al., 2017).

Apparently, there is a necessity for further robust studies among homogeneous populations, with stricter inclusion criteria and exclusion of multi-illicit substance use (Gunn et al., 2016), in order to evaluate the health effects of cannabis use during the perinatal period (Gunn et al., 2016) and to equip providers with more consistent and clear evidence (Mark et al., 2017). Until such evidence emerges, health care providers should include a discussion about potential adverse health outcomes associated with perinatal cannabis use and recommend discontinuing use of this substance during the perinatal period. Such communications should include detailed information pertaining to infant health and well-being and address changing cannabis policies, shifting social norms and perceived safety (Jarlenski et al., 2016). Particularly, a focus on well-being of the fetus is essential, as it plays a significant role in women's intentions to quit (Mark et al., 2017; Jarlenski et al., 2016). Health care providers should be offered training, as part of evidence-based practice programs, to better communicate scientific uncertainty with patients. Counseling about cannabis use might provide important opportunities to support and guide women in the process of quitting. Mark et al. (2017) found that nearly all pregnant women reporting cannabis use expressed an intention to stop use. Asking questions about cannabis use during pregnancy and the postpartum period may initiate a productive conversation around cannabis health impacts and support women in the decision to quit. These screenings should specifically ask about cannabis use in addition to other substances, as some individuals may not perceive cannabis as a "drug" (Holland et al., 2016).

4.1. Limitations

Evidence surrounding women's perceptions about perinatal cannabis use is emerging; we identified only 6 relevant studies, all published in recent years: 2012 (one study), 2015 (one study), 2016 (one study) and 2017 (three studies). Our search of four electronic databases did not locate any study examining perspectives about cannabis use during lactation and the postpartum period. Further evidence on this topic is necessary regarding the population of breastfeeding women. Of the six included studies, three inquired about general risk of cannabis use. One study explored information-seeking patterns, and two studies reported women's perceptions about specific risk to pregnancy and

fetus. Three studies used data from the National Survey of Drug Use and Health (NSDUH): Ko (2007–2012); Oh (2005–2014); and Jarlenski (2005–2015). Despite data overlaps among these studies, we did not exclude these papers for two reasons: Findings of these studies aligned with the overall review results and thus did not introduce bias regarding increased weight in one direction or another; Also these studies each examined a different aspect of the topic and provided valuable insights. For example, Oh et al. (2017) classified pregnant participants based on their marital status and found that increased use of cannabis from 2005 to 2014 was evident among unmarried women but not among their married counterparts.

5. Conclusion

The prevalence of cannabis use during pregnancy has increased over the last decade. Concurrent with the growing tendency to legalize cannabis, its perceived safety both in general and during pregnancy is also increasing. Women's perceptions of health risks due to cannabis use during the perinatal period are an important factor in the decision-making process regarding use or cessation, particularly as legal concerns are fading away. In the absence of unequivocal evidence in this area, a discussion about health concerns associated with cannabis use may influence women's perceptions of risk and help them to make a more informed choice in the face of uncertainty.

Conflict of interest

The authors declare there is no conflict of interest.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ypmed.2018.12.002.

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