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Policy Matters

Medical Marijuana Laws, Marijuana Use, and Opioid-Related Outcomes among Women in the United States



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ABSTRACT

Background: In the context of the opioid epidemic, a limited but growing body of literature has found state medical marijuana laws (MMLs) to be associated with lower levels of opioid prescribing. However, robust evidence linking state MMLs with individual-level opioid-related outcomes is lacking, particularly among women. This finding is especially true for pregnant and parenting women, who have been disproportionately affected by the opioid crisis.

Methods: Using data drawn from the 2002–2014 National Survey on Drug Use and Health, the study uses a difference-in-differences estimation strategy to compare opioid-related outcomes (opioid misuse initiation, opioid misuse in the past month and past year, and opioid use disorder) among all women, pregnant women, and parenting women in states with and without MMLs (before and after implementation). The study also investigates the impact of MMLs on marijuana use and marijuana use disorder.

Results: The findings indicate that MMLs were not associated with opioid misuse, opioid misuse initiation, or opioid use disorder among all women, pregnant women, and parenting women. These laws were, however, positively correlated with marijuana use and marijuana use disorder among all women and women with children. In addition, MMLs were associated with an increase in the frequency of opioid misuse for pregnant women and a decrease in the frequency of opioid misuse for parenting women.

Conclusions: This finding suggests that, although medical marijuana may be viewed by some as a substitute for opioid analgesics, MMLs may not be an effective policy tool to tackle the opioid epidemic among women, especially pregnant and parenting women.

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Prescription opioid misuse is a major public health crisis in the United States. Recent estimates show that more than 11 million individuals engaged in prescription opioid misuse during the last few years ([Substance Abuse and Mental Health Services Administration, 2018](#)). Along with a substantial economic burden ([Birnbaum et al., 2011](#); [Florence, Luo, Xu, & Zhou, 2016](#)), the opioid epidemic is associated with high rates of overdose deaths, hospitalizations, and emergency department admissions ([Coben et al., 2010](#); [Dart et al., 2015](#)).

The possible use of medical marijuana as a substitute for opioids has recently been broached in the literature ([Voelker, 2018](#)). Although a number of other policy initiatives, such as prescription drug monitoring programs (PDMPs), naloxone access, and integrative care models, have shown promise at

addressing the opioid crisis (Ali, Dowd, Classen, Mutter, & Novak, 2017; McClellan et al., 2018; Seibert et al., 2019), the turn to medical marijuana laws (MMLs) is based on a still-developing literature showing mitigation of adverse opioid outcomes in states with MMLs. MMLs decrease barriers to accessing marijuana and have been associated with increased marijuana use in the broader population (Carliner, Brown, Sarvet, & Hasin, 2017). Although the mechanisms through which decreases in opioid-related outcomes occur are unclear (because most studies did not investigate individual level opioid misuse), previous studies have documented evidence of MMLs being associated with lower levels of opioid prescribing (Bradford, Bradford, Abraham, & Adams, 2018; Wen & Hockenberry, 2018), lower overdose mortality (Bachhuber, Saloner, Cunningham, & Barry, 2014), and fewer hospitalizations related to opioid analgesics (Shi, 2017). Further, access to medical marijuana through the establishment of legally protected dispensaries, rather than just the enactment of MMLs, has been associated with a decrease in opioid addictions and opioid overdose deaths (Powell, Pacula, & Jacobson, 2018).

To date, only one study of which we know has examined the consequence of MMLs directly on individual-level marijuana use and opioid misuse; it finds little association between MMLs and opioid misuse (Segura et al., 2019). In this study, we extend and build on that work to investigate the impact of MMLs on the frequency of marijuana use and opioid misuse, including initiation, use/misuse in past month and past year, use disorder, and frequency of use/misuse among women. Women have been designated a priority population by the U.S. Department of Health and Human Services and contain a number of subpopulations of interest with respect to substance use. Pregnant and parenting women are subpopulations of particular focus. Substance use during pregnancy is widely recognized to have adverse impacts on both the child and mother; however, it remains common (Wong et al., 2011), and in recent years the rate of opioid-related neonatal abstinence syndrome more than quintupled (Patrick, Davis, Lehmann, & Cooper, 2015). In addition, because women are disproportionately the primary caregivers for children, a number of substance use treatment programs and policies specifically target women with children (Seibert et al., 2019; Young et al., 2009). To examine these subpopulations, we stratify our analysis of women by pregnancy, the presence of infants (0–3 years old) in the household, and the presence of any child (0–17 years old) in the household.

We conduct our analysis using a nationally representative individual-level sample of women, and use a difference-in-differences estimation strategy that leverages the establishment of legal and active marijuana dispensaries as a potentially better measure of the availability of medical marijuana and its effect on opioid use than MMLs alone (Powell et al., 2018). Additionally, our study examines a broader range of measures of marijuana use and opioid misuse, including not only the binary measure of use/misuse in the past year as in recent work (Segura et al., 2019), but also measures of use/misuse initiation, prevalence of use disorder, and frequency (in days) of use/misuse. In particular, by examining frequency of marijuana use and opioid misuse, our analysis captures the intensity of use in addition to the extent of use captured by the other National Survey on Drug Use and Health (NSDUH) measures, offering a more complete characterization of the crisis (Jones, 2017).

Methods

Data

This study uses data from the 2002–2014 NSDUH, a nationally representative survey of the civilian, noninstitutionalized population in the United States conducted annually by the Substance Abuse and Mental Health Services Administration. The NSDUH collects detailed information on substance use and is designed to be state representative, allowing for analysis of policies, such as MMLs, that vary by state (Center for Behavioral Health Statistics Quality, 2015). We initially restrict the sample to women (unadjusted pooled $N = 296,600$). The restricted-use NSDUH is used in this analysis, and all estimates were weighted to make the estimates nationally representative (weighted pooled $N \approx 1,483,000,000$). We also present evidence for subpopulations of pregnant women (unadjusted $N = 11,700$; weighted $N \approx 29,000,000$), women with infants (i.e., children <3 years old based on the NSDUH question of whether the respondent has a child in the household who is <3 years of age) (unadjusted $N = 47,700$; weighted $N \approx 136,000,000$), and women with children (based on the NSDUH question of whether the respondent has a child in the household who is <18 years of age) (unadjusted $N = 117,600$; weighted $N \approx 511,000,000$). The three subpopulations examined are not mutually exclusive; for example, a woman could be pregnant and also have a child under 3 years old, and thus could appear in all four samples. Comprehensive information on the NSDUH data collection methods and survey design can be found elsewhere (Center for Behavioral Health Statistics Quality, 2015). Because this was a retrospective study using encrypted de-identified data, it was determined to be exempt by our institutional review board.

Measures

We examine five outcomes for each substance. For marijuana we measure: 1) use in the past 30 days (did you use marijuana in the past 30 days), 2) use in the past 12 months (did you use marijuana in the past 12 months), 3) first use in the past 12 months (did you use marijuana for the first time in the past 12 months), 4) marijuana use disorder, and 5) the number of days used in the past year (on how many days in the past 12 months did you use marijuana). Similar to marijuana, for opioids, the outcomes are 1) misuse in the past 30 days, 2) misuse in the past 12 months, 3) first misuse in the past 12 months, 4) opioid use disorder in the past 12 months, and 5) the number of days of misuse in the past year. Opioid misuse either in the past 30 days or past 12 months in the NSDUH is measured as using prescription opioids in any way that a doctor did not direct to use them. We label first use/misuse in the past 12 months as past-year initiation. The NSDUH assesses symptoms of substance use disorder during the past year using the criteria specified within the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1994). The frequency of use/misuse is measured conditional on any use/misuse in the past year; that is, respondents reporting no use/misuse in the past year were not included in this measure resulting in values strictly greater than zero.

We follow Powell et al. (2018) in determining whether a state had implemented an MML and if it had active and legally protected medical marijuana dispensaries. An MML indicator alone

Table 1
Descriptive Characteristics of Women in the 2002–2014 National Survey on Drug Use and Health

	Women Overall	Pregnant Women	Women with Infants	Women with Children
Outcomes				
Past-month marijuana use	4.2%	3.3%*	4.5%*	3.8%*
Past-year marijuana use	7.7%	10.2%*	8.0%*	7.1%*
Past-year marijuana use disorder	0.8%	1.4%*	0.9%*	0.7%*
Past-year marijuana initiation	0.3%	0.4%*	0.2%*	0.2%*
Past-year frequency of marijuana use (days)	90.971	100.212*	99.018*	91.84*
Past-month opioid misuse	1.5%	0.8%*	1.8%*	1.6%*
Past-year opioid misuse	3.7%	4.3%*	4.6%*	4.1%*
Past-year opioid use disorder	0.5%	0.9%*	0.6%*	0.6%*
Past-year opioid misuse initiation	0.5%	0.9%*	0.7%*	0.6%
Past-year frequency of opioid misuse (days)	42.119	42.313*	45.845*	42.715*
Medical marijuana environment				
Medical marijuana law	24.2%	24.3%	24.7%*	24.5%*
Marijuana dispensaries	12.0%	12.0%	12.4%*	12.5%*
Covariates				
Age (mean)	47.211	28.13*	29.749*	36.941*
Non-Hispanic White	80.1%	76.7%*	77.6%*	77.6%*
Non-Hispanic Black	12.6%	14.0%*	13.7%*	14.2%*
Non-Hispanic other	5.0%	6.4%*	5.7%*	5.7%*
Hispanic	12.8	19.2%*	20.7%*	18.3%*
Less than high school	14.3%	15.9%*	15.4%*	14.1%*
High school	30.3%	26.0%*	27.3%*	27.9%*
Some college	27.6%	25.8%*	26.5%*	28.2%*
College or more	27.7%	32.2%*	30.8%*	29.8%*
Married	53.3%	64.1%*	67.0%*	67.4%*
Widowed	9.4%	0.3%*	0.3%*	1.2%*
Divorced	15.6%	6.6%*	7.2%*	14.7%*
Single	21.6%	29.1%*	25.5%*	16.7%*
Unemployment rate	6.745	6.643*	6.694*	6.697*
State prescription drug monitoring law	71.6%	71.5%	71.7%*	71.4%*
N	296,600	11,700	47,700	117,600

Weighted means and proportions based on the 2002–2014 National Survey on Drug Use and Health data. Asterisks denote a statistically different result from women overall.

* $p < .001$.

might not be sufficiently indicative of access, because medical marijuana infrastructure must be built after the passage of such laws. States with active and legally protected dispensaries have a more robust distribution infrastructure and greater levels of access. As such, we use separate indicators for states with MMLs but no dispensaries and states with MMLs and legal and active dispensaries. Following Ali et al. (2017), we control for active PDMPs, and use additional data from the Bureau of Labor Statistics to control for state unemployment rates. We drop observations from Colorado and Washington in 2014 to limit the impact of recreational marijuana legalization on our findings.

Empiric Strategy

We use a difference-in-differences strategy to examine the impact of MMLs and dispensaries on our outcomes. Changes in opioid outcomes in states that implemented MMLs are compared with “control” states that did not pass MMLs during the study period, thereby identifying the association of MML passage on opioid use. Two variables are of interest: an indicator for states with “MMLs alone” (i.e., states that had an active MML but no dispensaries), and an indicator for states with “active dispensaries” (i.e., the state had an active MML with legal dispensaries operating).

Control variables are included for both the individual and the state. At the individual level, we control for age, educational attainment, race, marital status, and income as a percentage of the federal poverty threshold. At the state level, we control for PDMP laws and the monthly state unemployment rate. We also

include state and month by year fixed effects. We estimate the regression using a linear probability model weighted by NSDUH estimation weights with standard errors clustered by state. Linear probability models are appropriate for estimating coefficient of observation-specific binary variables in models with fixed effects that cannot be estimated in either logit or probit models (Caudill, 1988).

Results

Summary statistics for our outcomes and covariates for each group examined can be found in Table 1. Approximately 7.7% of women reported using marijuana in the past year, whereas only 3.7% reported past-year opioid misuse. Rates of marijuana use are higher among pregnant women and women with infants, but slightly lower for women with any children. Past-year opioid misuse is higher for all three subpopulations examined. With respect to intensity of use, women overall use marijuana and opioids (91 and 42 days, respectively) fewer days of the year than the subgroups. In general, pregnant women and women with children are younger, less likely to be White, have lower levels of education, and more likely to be married.

Table 2 presents results for the impact of MMLs for women overall. MMLs alone have little correlation with marijuana or opioid use, but are associated with an increase in past-month opioid use. Access to marijuana through legal and active dispensaries is associated with a 1.3 and 1.1 percentage point increase in past-month and past-year marijuana use, respectively. Likewise, marijuana use intensifies, with women using

Table 2
Impact of MMLs on Marijuana- and Opioid-Related Outcomes among Women

	Past-Month Marijuana Use	Past-Year Marijuana Use	Past-Year Marijuana Use Disorder	Past-Year Marijuana Initiation	Past-Year Marijuana Frequency Use	Past-Month Opioid Misuse	Past-Year Opioid Misuse	Past-Year Opioid Use Disorder	Past-Year Opioid Initiation	Past-Year Opioid Frequency Misuse
MML alone	0.003 (0.004)	−0.001 (0.005)	0.0004 (0.001)	−0.0005 (0.001)	6.620 (5.579)	0.003* (0.001)	0.004 (0.003)	0.001 (0.001)	0.0005 (0.001)	−2.124 (4.955)
MML with dispensaries	0.013 [†] (0.004)	0.011* (0.005)	0.002 (0.001)	−0.0003 (0.001)	13.527* (5.902)	0.004 (0.002)	0.004 (0.005)	0.001 (0.002)	0.001 (0.001)	−4.314 (4.730)
Observations	292,100	292,100	292,100	292,100	42,200	292,100	292,100	292,100	292,100	18,000
Adjusted R ²	0.052	0.095	0.015	0.008	0.053	0.011	0.029	0.006	0.006	0.063

Abbreviation: MML, medical marijuana law.

Coefficients from linear probability models controlling for age, education, race, ethnicity, marital status, income, state unemployment rate, state prescription drug monitoring programs, state fixed effects, and month by year fixed effects. Standard errors clustered at the state level reported in parentheses. Observations rounded to the nearest 100s.

* $p < .05$.

[†] $p < .01$.

Table 3
Impact of MMLs on Marijuana- and Opioid-Related Outcomes among Pregnant Women

	Past-Month Marijuana Use	Past-Year Marijuana Use	Past-Year Marijuana Use Disorder	Past-Year Marijuana Initiation	Past-Year Marijuana Frequency Use	Past-Month Opioid Misuse	Past-Year Opioid Misuse	Past-Year Opioid Use Disorder	Past-Year Opioid Initiation	Past-Year Opioid Frequency Misuse
MML alone	−0.008 (0.017)	−0.028 (0.028)	−0.009 (0.007)	−0.005 (0.003)	28.718* (14.036)	0.007 (0.008)	−0.012 (0.016)	−0.007 (0.006)	−0.013 (0.010)	38.227* (18.848)
MML with dispensaries	0.019 (0.021)	0.014 (0.034)	−0.020 (0.011)	−0.014 [†] (0.004)	50.186 (33.070)	−0.0001 (0.008)	−0.032 (0.018)	−0.011 (0.007)	−0.024 (0.013)	49.934 (26.639)
Observations	11,700	11,700	11,700	11,700	1,700	11,700	11,700	11,700	11,700	700
Adjusted R ²	0.045	0.094	0.019	0.013	0.131	0.010	0.046	0.012	0.027	0.253

Abbreviation: MML, medical marijuana law.

Coefficients from linear probability models controlling for age, education, race, ethnicity, marital status, income, state unemployment rate, state prescription drug monitoring programs, state fixed effects, and month by year fixed effects. Standard errors clustered at the state level reported in parentheses. Observations rounded to the nearest 100s.

* $p < .05$.

[†] $p < .01$.

Table 4
Impact of MMLs on Marijuana- and Opioid-Related Outcomes among Women with Infants

	Past-Month Marijuana Use	Past-Year Marijuana Use	Past-Year Marijuana Use Disorder	Past-Year Marijuana Initiation	Past-Year Marijuana Frequency Use	Past-Month Opioid Misuse	Past-Year Opioid Misuse	Past-Year Opioid Use Disorder	Past-Year Opioid Initiation	Past-Year Opioid Frequency Misuse
MML alone	−0.002 (0.007)	−0.009 (0.008)	0.003 (0.002)	−0.0004 (0.001)	16.961* (6.718)	0.004 (0.004)	0.012 (0.008)	−0.002 (0.002)	0.001 (0.002)	−26.676* (11.907)
MML with dispensaries	0.013 (0.009)	0.003 (0.012)	0.008 (0.004)	0.002 (0.002)	6.806 (13.305)	−0.003 (0.010)	0.005 (0.016)	0.001 (0.003)	0.006* (0.003)	−39.547 [†] (12.379)
Observations	47,700	47,700	47,700	47,700	5,600	47,700	47,700	47,700	47,700	2,800
Adjusted R ²	0.034	0.061	0.013	0.002	0.059	0.013	0.025	0.008	0.006	0.088

Abbreviation: MML, medical marijuana law.
Coefficients from linear probability models controlling for age, education, race, ethnicity, marital status, income, state unemployment rate, state prescription drug monitoring programs, state fixed effects, and month by year fixed effects. Standard errors clustered at the state level reported in parentheses. Observations rounded to the nearest 100s.

* $p < .05$.
[†] $p < .01$.

Table 5
Impact of MMLs on Marijuana- and Opioid-Related Outcomes among Women with Children

	Past-Month Marijuana Use	Past-Year Marijuana Use	Past-Year Marijuana Use Disorder	Past-Year Marijuana Initiation	Past-Year Marijuana Frequency Use	Past-Month Opioid Misuse	Past-Year Opioid Misuse	Past-Year Opioid Use Disorder	Past-Year Opioid Initiation	Past-Year Opioid Frequency Misuse
MML alone	0.010* (0.005)	0.006 (0.006)	0.002 (0.002)	−0.001 (0.001)	21.912* (10.373)	0.001 (0.002)	0.010* (0.005)	−0.001 (0.001)	0.0001 (0.001)	−16.286 [†] (5.712)
MML with dispensaries	0.021 [†] (0.007)	0.015* (0.008)	0.006* (0.003)	−0.001 (0.001)	34.394* (13.639)	0.004 (0.004)	0.011 (0.011)	0.001 (0.002)	0.003 (0.002)	−14.139* (5.962)
Observations	117,600	117,600	117,600	117,600	11,900	117,600	117,600	117,600	117,600	6,100
Adjusted R ²	0.028	0.045	0.009	0.002	0.063	0.008	0.017	0.006	0.003	0.075

Abbreviation: MML, medical marijuana law.
Coefficients from linear probability models controlling for age, education, race, ethnicity, marital status, income, state unemployment rate, state prescription drug monitoring programs, state fixed effects, and month by year fixed effects. Standard errors clustered at the state level reported in parentheses. Observations rounded to the nearest 100s.

* $p < .05$.
[†] $p < .01$.

marijuana, on average, 13.5 more days per year after the establishment of dispensaries. Marijuana access is not associated with any opioid misuse outcome among women overall.

Table 3 presents results for the impact of MMLs for pregnant women. MMLs alone are associated with increases in frequency of use for both marijuana (28.7 more days) and opioids (38.2 more days), whereas access to marijuana through legal and active dispensaries is associated with a 1.4 percentage point decrease in past-year marijuana initiation. Marijuana access did not have a statistically significant effect on any opioid misuse outcomes.

Among women with infants (Table 4), although MMLs are associated with increases in the number of days marijuana is used (17 more days), neither MMLs nor active dispensaries are associated with any changes in the other marijuana outcomes examined. Estimates for the effect of marijuana on opioid use are mixed. Past use and use disorder outcomes are not statistically significant, although changes in past-year initiation and frequency of use are associated with marijuana laws. Opioid initiation increases by 0.6 percentage points and the frequency of opioid misuse decreases in both states with MMLs and states with dispensaries by 26.7 and 39.5 days, respectively.

Women with children (Table 5) exhibit results similar to those of women with infants. MMLs alone are associated with a 1 percentage point increase in past-month use and 22 days increase in the frequency of use, whereas active dispensaries are associated with increases in all marijuana measures except for initiation. Past-year opioid misuse increases by 1 percentage point in the wake of MML implementation, but the frequency of misuse declines by 16 days. Dispensaries are not associated with changes in likelihood of opioid misuse, but are associated with a decrease in the frequency of misuse by approximately 14 days per year. The adjusted R^2 in all the estimated models indicates appropriate level of goodness of fit for linear probability models under a difference-in-difference framework.

Discussion

Our study extends the literature on MMLs by being the first to examine medical marijuana access and opioid-related outcomes among women using individual-level data. In this study, we used a difference-in-differences model to examine the impact of state-level MMLs and marijuana dispensary laws on individual-level marijuana- and opioid-related outcomes among women, pregnant women, women with infants, and women with children. We did not observe any decreases in the likelihood of opioid misuse-related outcomes among women in states with MMLs. Indeed, we observed potentially higher levels of past-month opioid misuse under MMLs alone, which could be due to the fact that marijuana has been found to be a complement to, and not a substitution for, opioids (Finn, 2018). In contrast, among women with infants and women with children, medical marijuana access is associated with a decrease in the number of days opioids are misused. Although there seems to be a positive association between access to medical marijuana and marijuana use among all women and women with children, the effects on marijuana use for pregnant women and women with infants were not significantly different from zero and were negative for past-year initiation among pregnant women.

Because opioid-related mortality has continued to increase in the United States (Scholl, Seth, Kariisa, Wilson, & Baldwin, 2019) and states seek policies to reduce the crisis' impact, reporting suggests that some have begun to encourage medical marijuana

as a substitute for opioids (Voelker, 2018). However, our efforts to identify such substitution effects among women yielded mixed evidence of declines in opioid-related outcomes. Generally, there is little evidence of changes in the likelihood of opioid misuse. Instead, there is evidence, at least among women with children, of changes in the frequency of opioid misuse; these women misuse opioids less frequently with expanded access to marijuana. This finding implies, first, that MMLs by themselves may not be a viable tool to combat the opioid crisis. Second, given the substantial health risks associated with marijuana use among this population (Volkow, Baler, Compton, & Weiss, 2014), states may wish to consider carefully the impact of an increase in marijuana use among women.

The differential results between the likelihood of opioid misuse and the frequency of opioid misuse point to a potential limitation of using the NSDUH when examining issues related to the opioid crisis. The prevalence or likelihood of opioid misuse measures remained level over the study period (Jones, 2017)—a period during which opioid misuse was associated with dramatic increases in opioid-related prescriptions, hospitalizations, and fatalities. This discrepancy suggests that the opioid misuse measures in NSDUH may not be tracking the types of opioid misuse that fueled increases in these serious health consequences. However, the NSDUH's frequency of opioid misuse measures do exhibit increases consistent with other data on the crisis (Jones, 2017).

This study has several other limitations that are also worth noting. First, although we estimated a difference-in-differences model, the NSDUH is a cross-sectional survey based on self-reported measures; thus, implications of causality should be undertaken with caution. Given that the data are self-reported, it is likely that women may under report their opioid and marijuana use (Macleod, Hickman, & Smith, 2005). Additionally, women in MML states might also be more willing to report frequent marijuana use. However, these limitations are not unique to NSDUH, but are also applicable to other survey data. Second, MMLs differ across states in many dimensions. In this study, we have followed the previous literature in focusing on MML passage and legal dispensaries. Future work could examine other dimensions of MMLs, such as provisions for growing one's own marijuana or engaging in collective cultivation. Finally, we examine a relatively broad but policy-relevant population as far as the opioid crisis is concerned. It is possible that a study focusing on a different subset of the population (e.g., a less healthy population or a population afflicted with chronic pain) might yield a different set of estimates regarding the potential role for marijuana to decrease opioid misuse.

Implications for Practice and/or Policy

We found mixed evidence of a substitution effect of marijuana for opioids among parenting women already using opioids, suggesting that even if access to medical marijuana proves to be effective in decreasing the harmful effects of opioids in the general population, states could be mindful of the tradeoff regarding the potentially harmful effects of marijuana use.

Alternative policies could be considered, such as PDMPs and naloxone access laws, that have been shown to be effective (Ali et al., 2017; McClellan et al., 2018) in fighting opioid misuse and mortality, but do not carry the same risks. Another approach to dealing with the opioid crisis would be to consider increasing access to and utilization of treatment for opioid use disorder. Specifically, for pregnant women and mothers with opioid use

disorder, programs that have been found to be most effective offer comprehensive, integrated approaches to treatment that combine clinical and social services with care coordination and trauma-informed care for both mother and baby. States that want to improve treatment uptake among pregnant women could consider designing programs especially for this population. Since 2017, the State Targeted Response Grants and the State Opioid Response Grants from the Substance Abuse and Mental Health Services Administration have offered opportunities to states for innovations in the area of opioid use disorder treatment, and a number of states have used this funding to design programs for pregnant and reproductive-aged women. The passage of the fiscal 2019 appropriations law and the 2018 SUPPORT Act gave states more opportunities to expand treatment for women with opioid use disorder.

Conclusions

Although the adoption of MMLs has been documented to be associated with a reduction in opioid-related substance use disorder treatment admissions and opioid-related mortality, this study showed that these laws might be associated with an increase in marijuana use and marijuana use disorder. However, more research is needed in this area. This study also showed that MMLs might not have any impact on individual-level opioid-related outcomes, such as opioid misuse initiation, opioid misuse, and opioid use disorder. MMLs were, however, correlated with a decrease in the frequency of opioid misuse. Policy initiatives to tackle the opioid crisis among pregnant and parenting women could have a level of comprehensiveness that matches the complexity and multifaceted nature of opioid use and its correlates in this population.

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