



Factors associated with early marijuana initiation in a criminal justice population



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HIGHLIGHTS

- Early marijuana initiation among adolescents is associated with negative outcomes.
- Criminal justice outcomes among high-risk adolescent marijuana users are unclear.
- Earlier marijuana initiation is associated with more criminal offenses as an adult.
- Men in the criminal justice population initiate marijuana before women.
- Race did not affect marijuana initiation age in this population.

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ABSTRACT

Purpose: Initiation of marijuana during adolescence is associated with negative outcomes and is more common among those with criminal justice involvement. We sought to determine demographics, psychosocial factors, mental health factors, and criminal outcomes associated with earlier age at first marijuana use in a criminal justice population.

Methods: Data from structured, in-person interviews of adults in a criminal corrections program were analyzed. Participants (689 men and women ages 19 and older) were recruited for a larger smoking cessation trial (2009–2013) as a volunteer sample by flyers at a community corrections site. 516 had smoked both nicotine and marijuana and were included in the analysis. We determined associations between self-reported age at first marijuana use and sex, race, income, educational attainment, history of abuse, family problems, psychiatric problems, criminal record, and age of nicotine and alcohol initiation.

Results: Of 516 participants, 68% were men, and 64.5% were Black. No participants were of Hispanic ethnicity. Average age of marijuana initiation was 15.1 years (*SD* 3.7 years). After linear regression, earlier age at marijuana initiation was associated with male sex and more criminal offenses (person/violent and court). Race and psychiatric problems were not associated with earlier marijuana initiation.

Conclusions: Earlier adolescent marijuana initiation is associated with more criminal offenses in a criminal justice population. Men initiate marijuana earlier than women. Adolescents at high risk of justice involvement may benefit from delayed initiation of marijuana, specifically men. Additional studies should examine prevention strategies for adolescent marijuana use that target those at highest risk.

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1. Introduction

1.1. Statement of problem

Adolescents use marijuana at alarming rates. In 2014, 45% of high school students used marijuana in the past month, and one in ten used it on a daily or near-daily basis (Johnston, O'Malley, Miech, Bachman, & Schulenberg, 2015). The average age of marijuana initiation is 14 years old (American Academy of Child and Adolescent Psychiatry,

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2013), and adolescents are more susceptible to the effects of marijuana than adults because of the rapid brain changes that occur during this developmental period (Squeglia, Jacobus, & Tapert, 2009). Thus, initiation of marijuana during adolescence is associated with heavier and more problematic marijuana use in adulthood (Chen, O'Brien, & Anthony, 2005; Chen, Storr, & Anthony, 2009), and has negative effects on cognitive development (Dahl, 2004), educational outcomes (Leatherdale, Hammond, & Ahmed, 2008), physical symptoms (Brook, Stimmel, Zhang, & Brook, 2008), mental health outcomes (Ellickson, Martino, & Collins, 2004), and increases risk of disordered use and addiction (Chen et al., 2009).

1.2. Background

Because “early initiation” of marijuana - defined by some as use prior to age 14 (Brook, Balka, & Whiteman, 1999) and others as age 16 or less (Pope, Gruber, Hudson, Cohane, Huestis, & Yurgelun-Todd, 2003) has many negative associations, researchers have investigated demographic, mental health, and socioeconomic factors associated with age at first marijuana use in the general population. There have been mixed results in studies examining sex differences in age at first marijuana use (Leatherdale et al., 2008; Chen & Jacobson, 2012; Doherty, Green, Reisinger, & Ensminger, 2008). Similarly, there have also been mixed results in studies examining racial differences in age of marijuana initiation (Chen & Jacobson, 2012; Clark, Doyle, & Clincy, 2013; Sartor, Agrawal, Lynskey, Duncan, Grant, Nelson, et al., 2013). However, studies have found that Black adolescents are more likely to use marijuana as their first substance (Sartor et al., 2013) and use for longer periods of time compared to other races (Finlay, White, Mun, Cronley, & Lee, 2012). The association between race and marijuana use likely differs by the sex of the adolescent (e.g. Black males and White females had higher lifetime marijuana use rates in one study) (Schepis, Desai, Cavallo, Smith, McPetridge, Liss, et al., 2011) and psychosocial characteristics such as maternal education level (Guerra, Romano, Samuels, & Kass, 2000), family cohesion (Doherty et al., 2008), and neighborhood income and racial composition (Cronley, White, Mun, Lee, Finlay, & Loeber, 2012.)

Marijuana use during adolescence may disrupt white matter connections between brain regions that are key in emotional regulation, which may lead to internalizing problems (Medina, Nagel, Park, McQueeny, & Tapert, 2007), poor impulse control (Dawes, Mathias, Richard, Hill-Kapturczak, & Dougherty, 2008), increased depressive and anxiety symptoms (Green & Ritter, 2000; Renard, Krebs, Le Pen, & Jay, 2014), and suicidal behaviors (Lynskey, Glowinski, Todorov, Bucholz, Madden, Nelson, et al., 2004). These effects are more salient for girls (Renard et al., 2014; Patton, Coffey, Carlin, Degenhardt, Lynskey, & Hall, 2002). Adolescent-onset marijuana use has also been associated with psychosis in adults of a certain genetic susceptibility (Caspi, Moffitt, Cannon, McClay, Murray, Harrington, et al., 2005).

In addition to emotional regulation, problems in neurocognitive functioning and academic achievement have been associated with early marijuana use (Leatherdale et al., 2008; Brook et al., 2008). Adolescent initiation of marijuana is predicted by poor school attitude as well as inadequate performance in school (van den Bree & Pickworth, 2005), delinquency, peer substance use (van den Bree & Pickworth, 2005; Kandel & Chen, 2000), deviant behaviors, lower educational achievement (Brook et al., 1999), and increased risk of being arrested for drug and property crime, which may be due to poorer education and lack of job opportunities (Green, Doherty, Stuart, & Ensminger, 2010). In fact, adolescents in the criminal justice system have a higher prevalence of drug use (Morris, Harrison, Knox, Tromanhauser, Marquis, & Watts, 1995) which is positively related to number of offenses and arrests (Sickmund & Puzanchera, 2014). Childhood sexual and physical abuse has also been linked to earlier marijuana use (Bensley, Spieker, Van Eenwyk, & Schoder, 1999) and more substance-related problems (Simpson & Miller, 2002).

1.3. Age at marijuana initiation in the justice population

The few studies that have examined characteristics of adolescents in the criminal justice system mirror the studies with general adolescent populations, with mixed findings regarding racial and sex differences in marijuana initiation (Vaughn, Wallace, Perron, Copeland, & Howard, 2008; Prinz & Kerns, 2003). Prinz and Kerns describe a relationship between early initiation of substances and drug and violent offense charges in females only (2003). However, no control variables were included in the analysis and marijuana was not specifically assessed in regards to criminal outcomes.

1.4. Current study and hypotheses

Given the limited and mixed findings for marijuana initiation and use among adolescents in the criminal justice system, it remains important to understand these associations since delay of marijuana initiation may help in prevention of mental health and psychosocial outcomes including addiction and other delinquent behaviors. No studies were found to examine the association of age of marijuana initiation with adult criminal charges among a justice population. The current study was conducted to determine what demographic and psychosocial factors are associated with earlier age at first marijuana use in a high-risk criminal justice population. Our second aim is to examine mental health and criminal outcomes associated with earlier age at first marijuana use. We hypothesized that age of marijuana initiation would differ by race and gender, specifically with men and individuals of Black race having earlier age at first use. We also hypothesized that those with earlier marijuana use would have a higher prevalence of depression and anxiety, higher suicidality rating, and more adult legal charges, specifically those of greatest severity (i.e. violent offenses).

2. Material and methods

2.1. Study population

Adults involved in a criminal corrections program in Jefferson County, Alabama (the state's largest county) were recruited for a smoking cessation intervention via flyers posted at the county's community corrections program site. A total of 689 individuals signed informed consent and were assessed for initial eligibility with a baseline assessment. Only those who smoked cigarettes (89% of adults recruited) were allowed to participate in the study and were included in the final analysis. Because the prevalence of cigarette smoking remains high in the criminal justice population at 70–80% (Cropsey, Jones-Whaley, Jackson, & Hale, 2010), this sample was representative of the broader criminal justice population.

Eligible participants were adults age 19 or older currently under criminal justice supervision (e.g., parole, drug court, probation; reporting requirements similar across groups). For the purposes of this analysis, only data from the baseline assessment were used without applying any of the clinical trial exclusion criteria. Participants were compensated \$20 for the baseline visit. More details on the study population and original study design can be found in a publication by Cropsey et al. (2015).

Of the 689 adults recruited for the original smoking cessation study and receiving a baseline assessment, 516 participants endorsed marijuana use and were considered eligible for the current analysis. Those excluded were those who had never used nicotine ($n = 78$) and those who denied past marijuana use ($n = 95$).

2.2. Data collection

Trained personnel performed a baseline assessment which included informed consents, self-report measures of demographics and smoking history, and semi-structured interviews to obtain information on

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