

## GYNECOLOGY

# Prevalence and patterns of marijuana use among pregnant and nonpregnant women of reproductive age

Jean Y. Ko, PhD; Sherry L. Farr, PhD; Van T. Tong, MPH; Andreea A. Creanga, MD, PhD; William M. Callaghan, MD, MPH

**OBJECTIVE:** The objective of the study was to provide national prevalence, patterns, and correlates of marijuana use in the past month and past 2–12 months among women of reproductive age by pregnancy status.

**STUDY DESIGN:** Data from 2007–2012 National Surveys on Drug Use and Health, a cross-sectional nationally representative survey, identified pregnant ( $n = 4971$ ) and nonpregnant ( $n = 88,402$ ) women 18–44 years of age. Women self-reported marijuana use in the past month and past 2–12 months (use in the past year but not in the past month).  $\chi^2$  statistics and adjusted prevalence ratios were estimated using a weighting variable to account for the complex survey design and probability of sampling.

**RESULTS:** Among pregnant women and nonpregnant women, respectively, 3.9% (95% confidence interval [CI], 3.2–4.7) and 7.6% (95% CI, 7.3–7.9) used marijuana in the past month and 7.0% (95% CI, 6.0–8.2) and 6.4% (95% CI, 6.2–6.6) used in the past 2–12 months. Among past-year marijuana users ( $n = 17,934$ ), use almost

daily was reported by 16.2% of pregnant and 12.8% of nonpregnant women; and 18.1% of pregnant and 11.4% of nonpregnant women met criteria for abuse and/or dependence. Approximately 70% of both pregnant and nonpregnant women believe there is slight or no risk of harm from using marijuana once or twice a week. Smokers of tobacco, alcohol users, and other illicit drug users were 2–3 times more likely to use marijuana in the past year than respective nonusers, adjusting for sociodemographic characteristics.

**CONCLUSION:** More than 1 in 10 pregnant and nonpregnant women reported using marijuana in the past 12 months. A considerable percentage of women who used marijuana in the past year were daily users, met abuse and/or dependence criteria, and were polysubstance users. Comprehensive screening, treatment for use of multiple substances, and additional research and patient education on the possible harms of marijuana use are needed for all women of reproductive age.

**Key words:** correlates, dependence, marijuana, pregnant, prevalence

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Marijuana is the most commonly used illicit substance under federal law among individuals older than 12 years of age in the United States.<sup>1</sup> Some studies have reported associations

between marijuana use and adverse birth outcomes such as low birthweight and preterm birth,<sup>2-4</sup> whereas other studies have not.<sup>5-7</sup> As of July 2014, 23 states and the District of Columbia have legalized marijuana in either medical and/or recreational form.<sup>8</sup> Higher rates of marijuana use in the general population have been documented in states with legalized medical marijuana.<sup>9</sup> Therefore, it is important to examine marijuana use prevalence and characteristics of pregnant and nonpregnant women of reproductive age who use marijuana.

The most recent national estimates of marijuana use among women of reproductive age, 18–44 years of age, were published in 2009 using data from 2002–2006<sup>10</sup> and 2002–2007.<sup>11</sup> Both studies examined the prevalence of past-month marijuana use among pregnant, postpartum, and nonpregnant women

of reproductive age. Past-month marijuana use was highest among nonpregnant women without children (7.3%<sup>10</sup> and 10.9%<sup>11</sup>), followed by postpartum women and nonpregnant women with children (range, 3.8–5.3%, dependent on the child's age) and pregnant women (range, 1.4–4.6%, dependent on trimester).<sup>10,11</sup> However, national prevalence estimates have not been updated with more recent data. Furthermore, the prevalence of use prior to the past month, which may be reflective of preconception use among pregnant women has not been examined.

Additionally, frequency of use, marijuana abuse and/or dependence, and use of other substances in addition to marijuana are unknown. Thus, the objective of this study was to provide national prevalence estimates of marijuana use in the past month and in the past 2–12 months among women of reproductive

From the Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Atlanta, GA.

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Corresponding author: Jean Y. Ko, PhD.

JeanKo@cdc.gov

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age by pregnancy status, using data from 2007–2012. Additionally, we sought to describe correlates of marijuana use, prevalence of marijuana abuse and/or dependence, frequency of use, and women's attitudes toward use by pregnancy status.

## **MATERIALS AND METHODS**

### **Data source and sample**

We used combined public use data from the 2007–2012 National Surveys on Drug Use and Health (NSDUH). The NSDUH is a cross-sectional survey designed to estimate prevalence and correlates of substance use in US household populations aged 12 years or older. The NSDUH samples the civilian, noninstitutionalized population using multistage area probability sampling. Within each of the 50 states and the District of Columbia, census tracts and area segments were used to randomly sample households.<sup>12–16</sup>

The NSDUH uses a combination of computer-assisted personal interviewing conducted by an interviewer and audio computer-assisted self-interviewing, which is designed to provide respondents a private and confidential means of responding to questions regarding illicit drug use and other sensitive behaviors.<sup>12–16</sup> Weighted interview response rates for 2007–2012 ranged from 73.0% to 75.5%, with an overall response rate of 74.3%.<sup>12–16</sup> Detailed information about the sampling and survey methodology can be found elsewhere.<sup>12–16</sup>

Our analyses used deidentifiable public-use data; thus, the Centers for Disease Control and Prevention's Institutional Review Board deemed the study as research not involving human subjects and exempt from review. The combined 2007–2012 data yielded 93,878 female respondents aged 18–44 years. Of these, 93,373 women (99.5%) reported data on pregnancy status at the time of interview, and all of them had complete information on recent use of marijuana use.

### **Measures**

#### **Marijuana use**

The NSDUH captured marijuana use including hashish, a form of marijuana, regardless of consumption method, with

2 questions: "Have you ever, even once, used marijuana or hashish?" and, if yes, "How long has it been since you last used marijuana or hashish?" Individuals were defined as past-month users (respondents who used marijuana in the past month), users in past 2–12 months (respondents who used in the past year but not the past month), and nonusers in the past year (respondents who did not use any marijuana in the past 12 months). Nonusers in the past year included women who never used marijuana and those who used marijuana previously but not in the past year.

The NSDUH also assesses whether a respondent meets marijuana abuse or dependence criteria listed in the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV) in the past year.<sup>17</sup> DSM-IV criteria for substance abuse is met if 1 or more of the following is exhibited during a 12-month period: failure to fulfill major role obligations at work, school, or home; frequent use of substances in which it is physically hazardous; frequent or recurrent legal problems; and continued use despite persistent or recurrent social or interpersonal problems.

DSM-IV criteria for dependence is met if 3 or more of the following are exhibited during a 12-month period: tolerance; withdrawal symptoms; use of substance in larger amounts or over a longer period; persistent desire to cut down or control substance use; involvement in chronic behavior to obtain the substance; reduction or abandonment of social, occupational or recreational activities; or use of substance, regardless of persistent or recurrent physical or psychological problems caused or exacerbated by the substance.<sup>17</sup>

#### **Pregnancy and sociodemographic characteristics**

Women self-reported their pregnancy status and trimester of pregnancy at the time of the interview. Demographic variables included the following: self-reported age in years (18–25, 26–34, or 35–44); race/ethnicity (non-Hispanic white, non-Hispanic African-American, Hispanic, and other); education (less than high school, high school graduate, some

college, or college or more); employment (full time, part time, unemployed, and other [ie, disabled, keeping house full time, in school/training, or retired]); annual family income (<\$20,000, \$20,000–49,999, \$50,000–74,999, or ≥\$75,000); marital status (married; widowed, divorced, or separated; or never been married); and health insurance (private insurance; public insurance: Medicaid, Medicare, TRICARE, CHAMPUS, CHAMPVA, the Veterans Affairs, or military health insurance; or uninsured).

#### **Other substance use**

Smoking tobacco in the past year was defined as nonsmokers (respondents who did not smoke tobacco in the past year), tobacco smokers in the past 2–12 months (respondents who smoked tobacco in the past year but not the past month), and past-month tobacco smokers. Alcohol use in the past month was categorized as heavy use (drinking ≥5 drinks on the same occasion on each of ≥5 days in the past 30 days); binge but not heavy (drinking ≥5 drinks on the same occasion on at least 1 day in the past 30 days); past-month use but not binge or heavy; and no use. Other illicit drug use included hallucinogens, heroin, cocaine, inhalants, and any psychotherapeutics.

#### **Pattern of marijuana use and attitudes toward use**

The NSDUH asks respondents their age of initiation of marijuana use and frequency of use in the past 12 months, which was categorized to match previous NSDUH reports (1–11, 12–49, 50–99, 100–299, and ≥300 days).<sup>18</sup> Respondents were also asked about their method of obtaining their last used marijuana, the source of last bought marijuana, and difficulty of buying marijuana. Additionally, respondents were asked about the perceived risk of harm (physical and other ways) when they smoke marijuana once a month and once or twice a week (response options: great, moderate, slight, and no risk).

#### **Statistical analyses**

Prevalence of marijuana use in the past month and past 2–12 months was estimated by pregnancy status and by

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