



Full length article

Marijuana and tobacco co-use among a nationally representative sample of US pregnant and non-pregnant women: 2005–2014 National Survey on Drug Use and Health findings



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ARTICLE INFO

Keywords:

Marijuana
Cannabis
Tobacco
Pregnancy
Co-use
Disparity

ABSTRACT

Background: Marijuana and tobacco are the most commonly used illicit and licit drugs during pregnancy. This study aimed to examine a nationally representative sample of US pregnant women and to: (1) determine the prevalence of past month marijuana and tobacco co-use, (2) identify characteristics that distinguish marijuana and tobacco co-users from users of marijuana only, tobacco only, or neither, and (3) compare characteristics that differ between pregnant and non-pregnant co-users of marijuana and tobacco.

Methods: Data were obtained from 497,218 US women (8721 pregnant) ages 12–49 who participated in the 2005–2014 National Survey on Drug Use and Health. Prevalence and demographic and substance use characteristics were compared across groups using weighted estimates and chi-squared tests. Multinomial logistic regression identified demographic and substance use correlates of co-use.

Results: Co-use among pregnant and non-pregnant women was significantly more prevalent than marijuana-only use but was less common than tobacco-only use. In unadjusted frequencies, pregnant co-users significantly differed from non-pregnant co-users across several domains. Among pregnant women, multivariate correlates of co-use of tobacco and marijuana vs. tobacco-only use were ages 12–17, non-Hispanic black race, Hispanic ethnicity, and past month polytobacco, any alcohol, and other drug use (all adjusted odds ratios ≥ 2.0).

Conclusions: In this first examination of the prevalence and correlates of co-use of marijuana and tobacco among a nationally representative group of pregnant women, pregnant co-users were more likely to report other high risk behaviors compared with non-pregnant co-users and users of a single substance, suggesting disparities worthy of further investigation.

1. Introduction

Co-use of marijuana and tobacco has increased significantly in the US over the past decade. In 2012, 70% of adult marijuana users reported past month tobacco use, and 18% of adult tobacco users reported past month marijuana use (Schauer et al., 2015). Co-use of marijuana and tobacco, relative to use of marijuana alone, is associated with increased risk for cannabis use disorder (Agrawal et al., 2009; Montgomery, 2015), exacerbation of mental health symptoms and the presence of other psychosocial problems (Peters et al., 2012; Ramo et al., 2012), and poorer marijuana cessation outcomes (Agrawal et al., 2012; Peters et al., 2012). Co-use of marijuana and tobacco, relative to use of tobacco alone, has been associated with increased risk for tobacco use disorder and poorer tobacco cessation outcomes in some, but not all, studies (Agrawal et al., 2012; Peters et al., 2012). Preliminary

evidence suggests that co-use may be associated with additive, or even multiplicative, adverse health consequences relative to tobacco use only (Peters et al., 2016).

With rates of co-use of marijuana and tobacco increasing significantly in the US, a critical question is how prevalent co-use is among vulnerable populations who may be especially susceptible to associated negative health implications. In particular, co-use during pregnancy is concerning because use of each substance is associated with negative health consequences to the mother and fetus.

Women who smoke tobacco during pregnancy are more likely to have a wide range of negative maternal and neonatal outcomes, including increased risk of infertility, preterm delivery, stillbirth, low birth weight, and sudden infant death syndrome (SIDS) (U.S. Department of Health and Human Services, 2004); maternal tobacco smoking has also been strongly associated with adverse respiratory

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effects and negative behavioral and neurocognitive effects in children (DiFranza et al., 2004; Gilliland et al., 2001). Although the health consequences of smoking marijuana during pregnancy are less clear, marijuana use during pregnancy has been linked to reduced birth weight (though with smaller effects than those seen with tobacco smoking), increased risk of babies small for gestational age, maternal anemia, and poorer cognitive performance in adolescence (Gunn et al., 2016; Hall, 2015; Volkow et al., 2014). Though the distinct health effects of co-use of marijuana and tobacco during pregnancy have not been fully elucidated, co-use of these substances may be associated with continued use of both substances during pregnancy (Emery et al., 2016) and heightened risk for adverse health consequences relative to use of just one, as is suggested in the general population.

Marijuana is the most commonly used illicit drug during pregnancy, with 5.5% of pregnant women reporting past month use in 2014 (SAMHSA, 2015a Substance Abuse and Mental Health Services Administration [SAMHSA], 2015a). Tobacco is the most commonly used licit drug during pregnancy, with 15.2% of pregnant women reporting past month cigarette smoking in 2014 (SAMHSA, 2015a). Although marijuana and tobacco are the most widely used substances during pregnancy, the prevalence of co-use of these substances during pregnancy has not been well documented and has only been drawn from convenience samples of pregnant women, typically in obstetrics and primary care clinics. For example, in a small study of 116 pregnant women who use marijuana conducted in a prenatal care clinic, 43.5% reported current co-use of marijuana and tobacco (Mark et al., 2016). Current data on co-use of marijuana and tobacco from nationally representative samples of pregnant women are needed to inform the extent of co-use within this population.

Given the potential adverse maternal and neonatal health consequences associated with co-use of marijuana and tobacco during pregnancy, the purpose of this study is to examine a nationally representative sample of pregnant women in the US and to: (1) determine the prevalence of past month marijuana and tobacco co-use, (2) identify characteristics that distinguish marijuana and tobacco co-users from users of marijuana only, tobacco only, or neither, and (3) compare characteristics that differ between pregnant and non-pregnant co-users of marijuana and tobacco, all with the goal of informing future interventions for co-use of marijuana and tobacco in pregnant women.

2. Material and methods

2.1. Data source and sample

Data are from 8721 pregnant women and 488,497 non-pregnant women ages 12–49 who responded to the National Survey on Drug Use and Health (NSDUH) between 2005 and 2014, the ten most recent publicly available years of data from NSDUH. In order to obtain a pregnant sample large enough for analysis, we have pooled data from these ten years. NSDUH is a nationally representative household survey conducted with US civilians and sponsored by the Substance Abuse and Mental Health Services Administration. Participants are recruited from each US state and the District of Columbia using multistage area probability sampling. Response rates between 2005 and 2014 ranged between 71% and 76%. More details about the survey methodology can be found elsewhere (SAMHSA, 2015b; SAMHSA, 2010).

2.2. Measures

2.2.1. Pregnancy status

Pregnancy status was assessed by asking all women ages 12–49 years, “Are you currently pregnant?” Pregnancy trimester was assessed by asking those who reported being currently pregnant how many months pregnant they were at the time of survey (1–3 months = first trimester, 4–6 months = second trimester, 7–9 months = third trimester).

2.2.2. Tobacco and marijuana use

Past month tobacco use was defined as any use in the past 30 days of cigarettes, cigars, pipes, or smokeless tobacco. Past month marijuana use was defined as any use in the past 30 days of marijuana or hashish. Co-use of marijuana and tobacco was defined as self-reported past month use on at least one day or more of marijuana and past month use on at least one day or more of tobacco or blunts (i.e., a cigar containing marijuana). Blunt users were automatically classified as co-users of marijuana and tobacco, since blunts are hollowed out cigars filled with marijuana. Tobacco-only use was defined as those reporting past month tobacco use, but no past month marijuana or blunt use. Marijuana-only use was defined as those reporting past month marijuana use, but no past month tobacco or blunt use. Non-users were those who did not report past month use of tobacco, marijuana, or blunts.

Past month marijuana and tobacco use characteristics were also assessed. Past month marijuana use frequency was based on the number of days of use in the past 30, dichotomized into $< = 19$ days and > 20 days; this dichotomization, sometimes called almost daily or near daily use, is commonly reported in NSDUH (SAMHSA, 2013) and other epidemiological studies (EMCDDA, 2012). Daily cigarette use was assessed (i.e., daily vs. nondaily), and number of cigarettes smoked per day (CPD) on smoking days were collected categorically (i.e., ≤ 1 , 2–5, 6–15, 16–25, > 25 CPD) and collapsed into a three-category variable: $< = 5$ CPD, 6–15 CPD, $> = 16$ CPD.

Past month use of different tobacco products (i.e., cigarettes, cigars, pipes, chewing tobacco, snuff) was assessed among co-users and tobacco-only users, with “any” use being use of the product on any of the past 30 days, and “only” use being past 30-day exclusive use of that tobacco product (and no other tobacco products assessed by NSDUH). Polytobacco use was defined as reported use of more than one tobacco product (cigarettes, cigars, pipes, chewing tobacco, snuff) during the past 30 days.

Past year marijuana dependence was assessed based on the criteria from the American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV), where dependence was based on an individual meeting ≥ 3 of six dependence criteria. Note that results utilize “dependence” language from DSM-IV in keeping with NSDUH measurement; however, we utilize current DSM, 5th edition language of “use disorders” in the discussion of these results.

Nicotine dependence was assessed based on meeting the criteria for dependence outlined by the Nicotine Dependence Syndrome Scale (NDSS) (Shiffman et al., 2004) or by meeting the criteria assessed by the Fagerström Test of Cigarette Dependence (FTCD) (Fagerstrom, 2012). Based on the NDSS score, a respondent was defined as having nicotine dependence if their average score (across 17 items with a 5-point likert scale) was greater than or equal to 2.75; based on the FTCD, a respondent was defined as having nicotine dependence if the first cigarette was smoked within 30 min of waking up on the days they smoked and the respondent reported smoking cigarettes in the past month.

2.2.3. Other substance use

Alcohol use was categorized into heavy alcohol use or binge drinking (consuming ≥ 5 drinks on the same occasion, on > 1 day in the past month), past month alcohol consumption but not heavy use or binge drinking, and no past month alcohol consumption. Past month other illicit drug use was defined as any nonmedical use of any of the following products in the past 30 days: cocaine, crack, heroin, hallucinogens, inhalants, opiates, tranquilizers, stimulants, and sedatives.

2.2.4. Demographic characteristics

Demographic characteristics including age, race/ethnicity, educational attainment (assessed only among those ages ≥ 18 years), household income, marital status (assessed only among those ages ≥ 18 years), and self-reported health status (dichotomized into “good to excellent” and “poor to fair” from response options “poor,” “fair,”

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