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Marijuana and tobacco co-administration in blunts, spliffs, and mulled cigarettes: A systematic literature review

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HIGHLIGHTS

- This is the first systematic review of marijuana and tobacco co-administration.
- Of 45 articles located, most were observational/descriptive studies.
- Experimental research on marijuana and tobacco co-administration is needed.

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ABSTRACT

Background: Blunts and spliffs/mulled cigarettes combine marijuana and tobacco for co-administration (use at the same time, in the same product). Co-administration of marijuana and tobacco presents significant potential for nicotine exposure, and may lead to exclusive tobacco use patterns, nicotine addiction, and compounded health effects. No review articles have summarized the number and nature of studies published on these co-administered products.

Methods: Keywords "(blunt* OR spliff OR mull* OR joint) AND (tobacco OR smok* OR cigarette) AND (cannabis OR marijuana OR hashish)" were searched in the published literature. A total of 220 articles were considered for inclusion, 49 were reviewed by two independent qualitative coders, and 45 were included in this review.

Results: Of the 45 articles, most ($n = 27$) of studies were observational or descriptive; ten were qualitative, five employed causal designs, and three were mixed methods. A majority of the studies assessed blunts; only 11 studies assessed spliffs/mulled cigarettes. Many studies focused on sub-populations of youth, males, and African Americans. Use of co-administered marijuana and tobacco products was associated with several indicators of problematic use patterns, including perceptions of less risk, dependence on nicotine and marijuana, and greater subjective effects related to marijuana.

Conclusions: Literature on marijuana and tobacco co-administration comes largely from qualitative and observational/descriptive studies. In addition to continued surveillance, experimental research that directly assesses the smoking patterns of co-administered marijuana and tobacco products as compared with to those of marijuana and tobacco only products is needed to determine the potential long-term health consequences of using blunts, spliffs, or other co-administered products.

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1. Introduction

Marijuana is the most widely used illicit substance in the U.S., with 7.5% of population over the age of 12 reporting use in the past month (Substance Abuse and Mental Health Services Administration, 2014a). While the health effects of marijuana consumption are debated, regular use can pose potential public health concerns, including reduced educational attainment; risk of injury from driving; increased respiratory symptoms; potential long-term health consequences such as cancer, chronic obstructive pulmonary disease, and heart disease; addiction in some users; and increased risk of psychoses in vulnerable populations (Volkow, Baler, Compton, & Weiss, 2014).

A majority of marijuana users co-use tobacco products (Schauer, Berg, Kegler, Donovan, & Windle, 2015). Co-use of marijuana and tobacco has been associated with engagement in other health risk behaviors (i.e., increased drugged driving, decreased condom use, increased use of alcohol and other drugs), worse mental health status, higher levels of dependence on either substance, and more difficulty quitting marijuana (Peters, Budney, & Carroll, 2012; Ramo, Liu, & Prochaska, 2012). Co-use of marijuana and tobacco may also be associated with some additive health risks (e.g., more severe negative respiratory effects) relative to using either substance alone (Badiani et al., 2015; Meier & Hatsukami, 2016; Rooke, Norberg, Copeland, & Swift, 2013). A number of reasons exist for the co-use of marijuana and tobacco, including neurobiological overlap (i.e., the endocannabinoid system appears involved in addiction to tobacco); simultaneous causation between tobacco use disorder and cannabis use disorder; shared genetic, environmental, and temperamental factors; synergistic psychopharmacological interactions (e.g., nicotine may enhance subjective responses to marijuana); and a shared primary route of administration as combusted or smoked substances (Agrawal, Budney, & Lynskey, 2012; Rabin & George, 2015). Furthermore, marijuana and tobacco can be co-administered (i.e. used at the same time, in the same product) in blunts, which are partially or entirely hollowed out cigar wrappers filled with marijuana (Sifaneck, Kaplan, Dunlap, & Johnson, 2003; Soldz, Huyser, & Dorsey, 2003), and spliffs, which are joints filled with both loose-leaf tobacco and marijuana (Williams, 2015) (this process of mixing the two in a joint is also referred to as "mulling" or "mulled cigarettes") (Belanger, Akre, Kuntsche, Gmel, & Suris, 2011; Belanger et al., 2013). National surveillance systems in the U.S. have not consistently collected and reported information on use of blunts, spliffs, and mulled cigarettes, making it difficult to describe current patterns of use of co-administered products. In some European countries, spliffs have been documented as a common way of consuming marijuana (Akre, Michaud, Berchtold, & Suris, 2010; Amos, Wiltshire, Bostock, Haw, & McNeill, 2004; Belanger et al., 2013; Highet, 2004).

Co-administration of marijuana and tobacco presents added public health concerns on top of marijuana only use and on top of concurrent marijuana and tobacco use (i.e., not in the same product), including the possibility that non-tobacco using youth will be exposed to nicotine, leading to exclusive tobacco use patterns and nicotine addiction (Belanger et al., 2013; Patton, Coffey, Carlin, Sawyer, & Lynskey, 2005). Qualitative studies have documented that up to one-half of the spliff is often composed of loose-leaf tobacco (Akre et al., 2010), presenting significant potential for nicotine exposure. Individuals consuming spliffs in social settings may not even be aware that tobacco has been added to the product, which otherwise looks like a joint. With regard to blunts, even if all tobacco is removed from the cigar, residual nicotine may be present on the wrapper, potentially exposing blunt users to nicotine. Another public health concern is the potential for compounded health effects from use of both tobacco and marijuana.

Evolving policies related to the legalization of marijuana for recreational and medicinal purposes could further impact the use of and public health concerns from co-administered tobacco and marijuana products. As of 2016, more than half of all U.S. states have legalized marijuana or one of its constituents for medicinal or recreational use (Association of State and Territorial Health Officials, 2015), increasing access (Substance Abuse and Mental Health Services Administration, 2014b), changing perceptions of risk (Johnston, O'Malley, Bachman, Schulenberg, & Meich, 2016; Johnston, O'Malley, Meich, Bachman, & Schulenberg, 2014), and potentially altering use patterns. Despite the changing marijuana policy climate and the potential public health implications, blunts, spliffs, and mulled cigarettes are often omitted from tobacco and marijuana related research. To date, no review articles have been published summarizing the number and nature of studies published on co-administered marijuana and tobacco. This systematic review of the published literature sought to describe the current state of marijuana and tobacco co-administration research and identify the resulting gaps in research that can be used to inform the public health significance of use of co-administered products. More specifically, this review aimed to summarize the prevalence, correlates (sociodemographic characteristics, tobacco and cannabis use disorder, risk perceptions and subjective effects), and health consequences of use of co-administered products.

2. Material and methods

This systematic review of the published literature focuses on co-administration of both marijuana and tobacco in a variety of products. For the purposes of this review, co-administration is defined as consuming marijuana and tobacco at the same time, in the same product. In