Summer as a Risk Factor for Drug Initiation

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J Gen Intern Med 35(3):947–9
DOI: 10.1007/s11606-019-05176-3
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INTRODUCTION

In 2017, an estimated 3,033,000 individuals in the United States (US) initiated cannabis, 1,037,000 initiated cocaine, 794,000 initiated LSD, and 787,000 initiated ecstasy/MDMA/Molly.¹ Few studies, however, have investigated season as a risk factor for initiation of these drugs, which are among the most commonly used in a “recreational” manner (e.g., in party settings). Prevalence of initiation of alcohol, tobacco products, and cannabis is estimated to be highest in summer months among adolescents and college students, but studies have not documented clear peaks in initiation of other drugs such as cocaine and hallucinogens in specific seasons,^{2,3} or examined initiation across the broader age ranges in the general population.

Using a drug for the first time can place individuals at unique risk as new initiates may be unfamiliar with drug effects. Drug intoxication leading to emergency department (ED) visits has peaked over the summer in Europe,⁴ but it is unknown to what extent increased risk of drug-related harm in the summer is due to new users rather than those with established drug use patterns. Better understanding of seasonal variation in initiation in the full population would better inform prevention and response to potential adverse drug outcomes. Our study objective was to assess whether summer months are a risk factor for drug initiation in the US.

METHODS

Data were analyzed from individuals (ages ≥ 12) surveyed in the 2011–2017 National Surveys on Drug Use and Health ($N = 394,415$),¹ annual cross-sectional surveys of non-institutionalized individuals in the US. Response rates ranged from 67.1 to 74.4%. Respondents reporting use of cannabis, ecstasy/MDMA/Molly, LSD, and/or cocaine were asked if they initiated use in the past two years. These “new” initiates were asked the year/month of initiation. We collapsed months of initiation into summer (June through August) versus other

months and used chi-square tests to determine whether the proportion of initiates in summer was different than other seasons. We then determined whether results are homogeneous across age of first use, sex, race/ethnicity, and survey year, via Rao-Scott chi-square using SAS 9.4. The Institutional Review Board of New York University Langone Medical Center deemed this analysis exempt from review.

RESULTS

Initiation of each of the four drugs was significantly more likely to occur in summer than in other months (Fig. 1). Specifically, 30.4% (SE, 0.6) of cannabis use was initiated in summer compared with other seasons, 27.5% (SE, 1.1) of cocaine use was initiated in summer compared with other seasons, 34.0% (SE, 1.5) of LSD use was initiated in summer compared with other seasons, and 29.8% (SE, 1.2) of ecstasy use was initiated in summer compared with other seasons.

Differences in season of initiation were stable across demographic characteristics and survey year, with some exceptions (Table 1). With regard to cocaine initiation, black individuals (18.2% [SE, 2.9]) were less likely to initiate in summer than those of other races/ethnicities (26.8–39.3%; $P < 0.01$). Also, with regard to LSD initiation, in 2011 and 2012, only about a quarter (24.9–26.9%) initiated in summer compared with later years (31.4–43.0%, $P < 0.01$).

DISCUSSION

Over a third of LSD use and over a quarter of cannabis, cocaine, and ecstasy use is initiated during summer months in the US. These findings add to previous research which has found that ED presentations resulting from acute drug intoxication peak over summer months.⁴

Summer months may leave individuals more susceptible to drug initiation due to increased idle time,³ or social activities that increase exposure to drugs or willingness to use drugs. For example, outdoor dance festivals have increased in popularity in recent years, and drug use is prevalent at such parties, with clusters of poisonings and deaths related to drug use occurring at such festivals.⁵

Limitations should be noted. First, reported month of initiation may have been impacted by issues with recall. Second,

Received May 11, 2019

Accepted July 1, 2019

Published online July 23, 2019

Figure 1 Comparisons between season of drug initiation among past-year initiates, 2011–2017. Initiates were defined as individuals who reported initiating a drug for the first time in the past two years. Error bars indicate 95% confidence intervals.

differences in initiation between summer and other seasons were only modest.

More research is needed to determine causes for summer as a risk factor and to determine whether these factors can be

Table 1 Estimated Percentage of Individuals Initiating Drugs in Summer Among Key Demographic Characteristics and Survey Year

	Cannabis	Cocaine	LSD	Ecstasy/MDMA/Molly
	% (SE)	% (SE)	% (SE)	% (SE)
Age of first use, year				
11–17	32.1 (0.7)	26.6 (2.1)	35.2 (2.2)	32.1 (1.7)
18–25	28.6 (0.9)	26.4 (1.3)	32.3 (1.8)	27.4 (1.5)
26–34	32.9 (3.4)	33.4 (4.5)	39.4 (5.3)	34.4 (3.8)
≥35	24.4 (3.4)	40.7 (4.3)	67.2 (NA)	37.5 (4.3)
Comparison	$P=0.07$	$P=0.18$	$P=0.12$	$P=0.12$
Sex				
Male	29.6 (0.9)	26.4 (1.4)	33.6 (2.0)	30.2 (1.7)
Female	31.2 (0.9)	28.8 (1.8)	34.7 (2.2)	29.5 (1.6)
Comparison	$P=0.22$	$P=0.30$	$P=0.73$	$P=0.74$
Race/ethnicity				
White	31.2 (0.8)	26.8 (1.6)	34.4 (1.7)	30.7 (1.4)
Black	30.7 (1.5)	18.2 (2.9)	31.1 (4.2)	27.6 (3.2)
Hispanic	29.0 (1.3)	28.6 (2.4)	27.9 (3.3)	26.0 (2.4)
Other	28.8 (1.9)	39.3 (4.1)	42.6 (4.5)	35.1 (3.8)
Comparison	$P=0.40$	$P<0.01$	$P=0.10$	$P=0.18$
Survey year				
2011	31.8 (1.6)	30.0 (3.5)	26.9 (3.4)	30.1 (2.9)
2012	30.9 (1.4)	27.8 (2.8)	24.9 (3.5)	30.0 (3.1)
2013	33.1 (2.1)	29.0 (4.0)	31.7 (3.8)	27.8 (2.4)
2014	31.6 (1.7)	30.0 (3.1)	32.9 (3.5)	28.7 (2.7)
2015	28.7 (1.5)	24.6 (3.1)	38.4 (3.2)	32.2 (2.8)
2016	27.3 (1.2)	26.6 (2.7)	43.0 (3.0)	29.3 (3.0)
2017	30.0 (1.8)	26.0 (2.8)	31.4 (3.7)	30.5 (4.6)
Comparison	$P=0.16$	$P=0.85$	$P<0.01$	$P=0.97$

Comparison refers to Rao-Scott χ^2 test which tests for variation in prevalence estimates. Molly was not added to the definition of ecstasy/MDMA until 2015. SE, standard error

modified. Given that the risk for initiation for each drug examined is fairly consistent throughout the year, with a slight increase over the summer, prevention efforts should be incessant, perhaps with an increase in vigilance (for parents and/or educators) and additional messaging during late spring.

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Funding Information Research reported in this publication was supported by the National Institute on Drug Abuse of the National Institutes of Health under Award Numbers R01DA044207 (PI: Palamar) and K01DA038800 (PI: Palamar).

Compliance with Ethical Standards:

The Institutional Review Board of New York University Langone Medical Center deemed this analysis exempt from review.

Conflict of Interest: The authors declare that they do not have a conflict of interest.

Disclaimer: The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

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