

Marijuana Use and Its Nuanced Relationship with HIV Care Continuum Metrics Among Young Black MSM



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Introduction

- Since late 2012 there has been an increase in use of medical marijuana and, for the first time, decriminalization of recreational marijuana.
- The HIV continuum of care is a model that helps us understand stages that impact ultimate viral suppression.
- Recreational marijuana use has been studied extensively in the context of HIV transmission as a potential driver of HIV epidemics in populations most at risk such as younger Black MSM.
- We are unaware of any studies to date which examine the effect of marijuana use on the HIV care continuum.

Objective

To examine how the use of marijuana affects the HIV care continuum.

Methods

Setting and Study Population: Respondent level data were collected from a longitudinal cohort of 623 young Black MSM, 16-29 years of age in Chicago from August 2013 to July 2014.

Recruitment: Participants were recruited via respondent-driven sampling with seeds originating in community social spaces, online venues, schools, CBOs, treatment programs, and/or LGBT centers.

Survey: CAPI was used to collect information on demographics, potential drivers of HIV care success, marijuana use and purpose of use as well as other commonly used behavior and risk variables.

Methods

Continuum of Care Measures: HIV care continuum measures included: HIV infected unaware, HIV infected aware, linkage to care, retention in care, adherence to antiretrovirals and viral suppression. Linkage to care, retention in care and adherence to antiretrovirals were based upon self report.

HIV Infected Unaware: HIV infection (including acute infection) was determined by three assays applied to samples eluted from dry blood spot samples. HIV infected unaware was determined by the number of clients who reported HIV negative status (or never tested), and who were found to be HIV infected by testing. All clients found to be HIV infected unaware were reviewed and confirmed by a trained social worker following the study visit. **Linkage:** Linkage was defined as having at least one HIV medical care visit within 3 months of diagnosis. **Retention:** Retention in care was defined as two or more appointments within 90 days in the previous 12 months. **Adherence:** Adherence to antiretrovirals was defined as missing HIV medications on fewer than 4 days in the previous month. **Viral Suppression:** Viral suppression was defined as having an HIV RNA <2000 nucleic acid (NA) copies/mL.

Model generation and Analysis: RDS-weighted multivariable logistic regression was utilized to analyze the individual cascade metrics. Covariates included in all models, were factors statistically significant at p<0.05 in univariate analyses or were known confounders. Effect modification was assessed using cross-products between frequency of marijuana use and each of the covariates in the models.

RDS Analysis: Giles and Handcock weights were used for all descriptive statistics and regression models.

Results

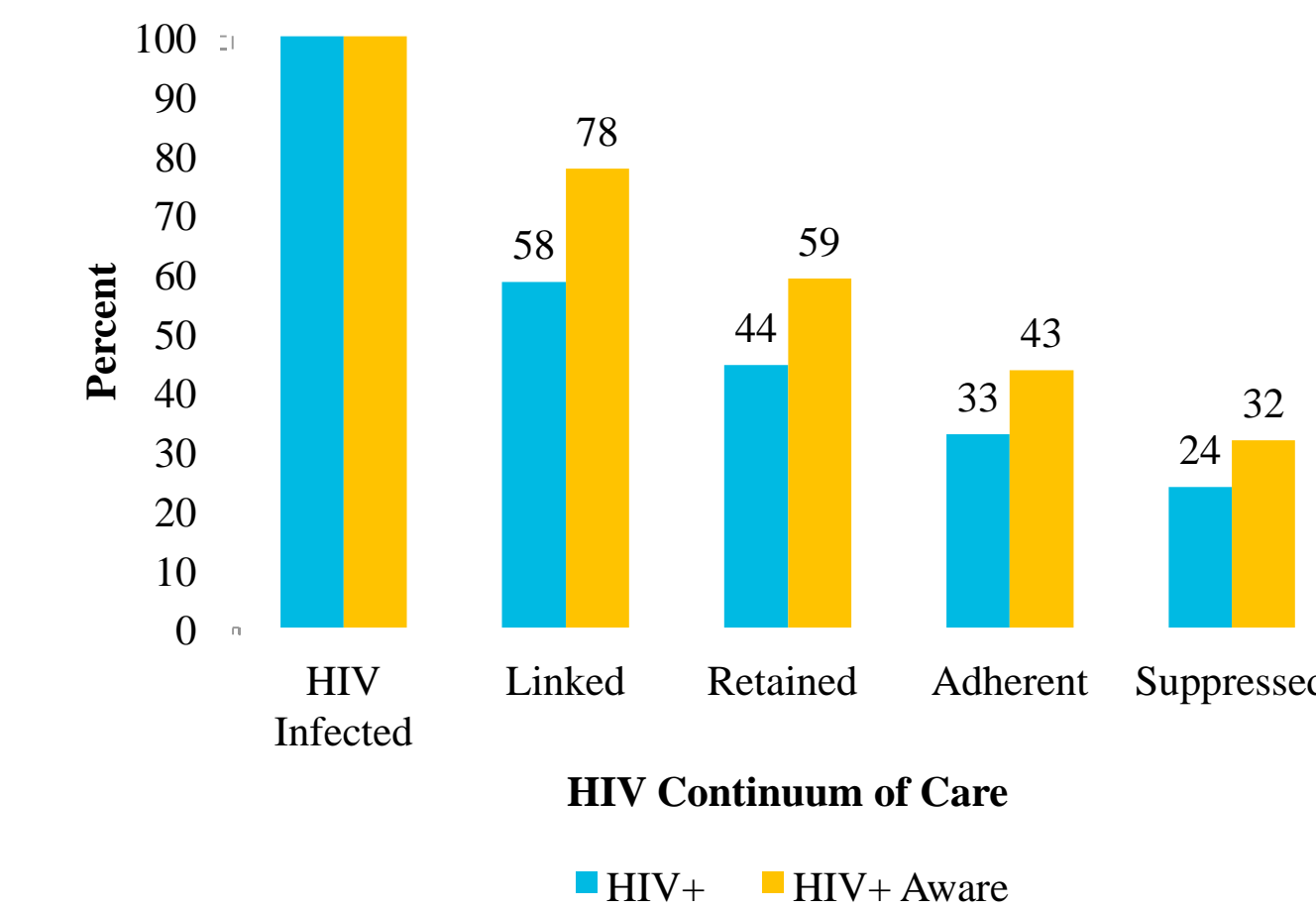


Figure 1. HIV continuum of care stratified by total HIV+ and HIV+ aware individuals.

Intermittent marijuana use is significantly, negatively correlated with the use of Molly/E/ecstasy (Table 1). No other significant correlations existed between marijuana and other drug/alcohol use.

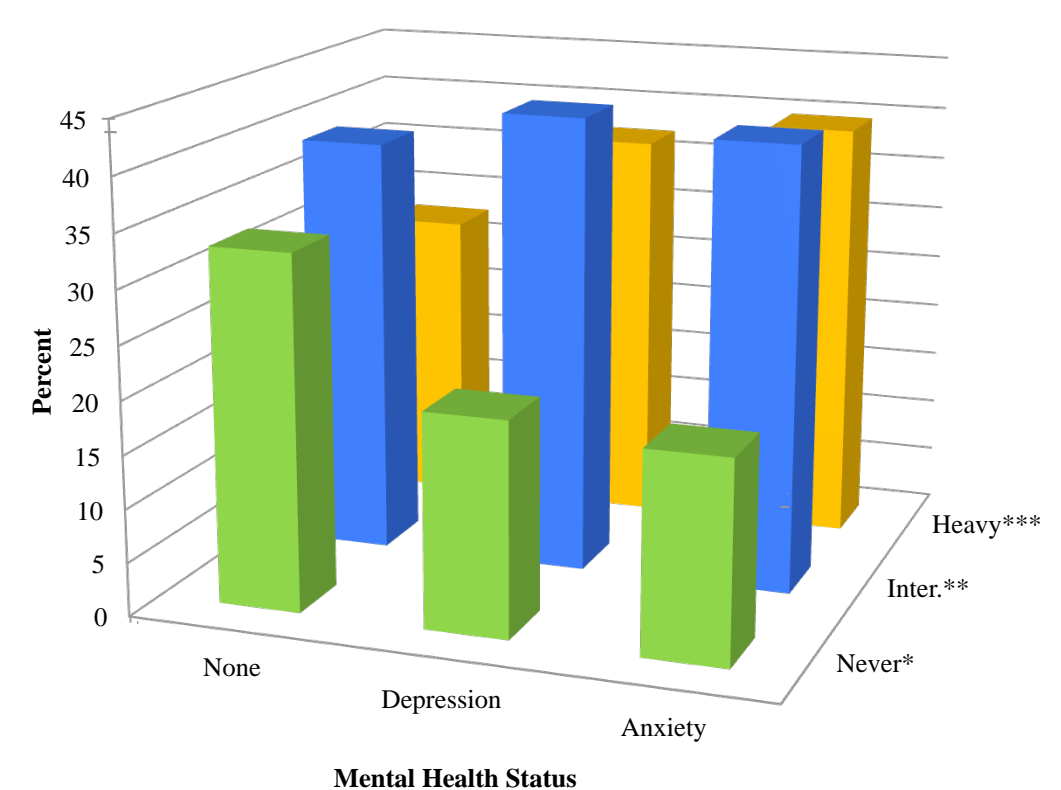


Figure 2. Percent of marijuana users with depression and anxiety

Adjusted odds ratios for RDS-weighted logistic regression models (Table 2) indicate that marijuana use, either intermittent or heavy, significantly increases the odds of being HIV+ unaware.

We find that, among those that are HIV+ aware, 32% of respondents are virally suppressed (Figure 1). Comparatively, we only find that 24% of all HIV+ individuals have achieved viral suppression.

Table 1. Correlation of intermittent and heavy marijuana use with other drug use, in the past 12 months

Other Drugs	Intermittent ¹	Heavy ²
Molly/E/ecstasy	-0.15*	-0.0062
Poppers	0.027	-0.041
Coke	-0.045	-0.020
Heroin	0.023	-0.086
Psychadelics	-0.020	0.12
Meth	0.038	0.067
Prescriptions	-0.045	0.037
Alcohol	-0.010	-0.017

* p<0.05, ** p<0.01
¹Intermittent use is defined as anything less than and including weekly use
²Heavy use is defined as at least once per day

We find a roughly equal percent of depression and anxiety among intermittent marijuana users (Figure 2). Among heavy marijuana users we find a greater proportion anxious. All differences between groups are non-significant.

Table 2. Odds ratios from RDS-weighted logistic regression models¹ for cascade variables, stratified by frequency of marijuana use (each variable is a separate model, N=623)

Cascade Variable	Intermittent Use ^{2,3}	Heavy Use ^{2,4}
	OR (95% CI)	OR (95% CI)
HIV+ unaware	3.69 (1.09, 12.56)*	5.33 (1.68, 16.97)**
Linked	3.10 (0.49, 19.71)	0.39 (0.058, 2.66)
Retained	1.26 (0.39, 4.11)	1.02 (0.30, 3.52)
Adherent	1.54 (0.44, 5.45)	0.97 (0.27, 3.47)
Suppressed	0.57 (0.06, 5.23)	0.36 (0.05, 2.59)

* p<0.05, ** p<0.01
¹Adjusting for age, education, employment, health coverage, homeless status, depression, and other drug use
²Compared to those who report never using marijuana in lifetime
³Intermittent use is defined anything less than and including weekly use
⁴Heavy use is defined as at least once per day

Results

Examining the complete model (Table 3) we find that intermittent marijuana use, compared to never users, significantly increases the odds of being HIV+ unaware (AOR 3.69), while heavy marijuana use, also compared to never users, leads to a greater significant increase (AOR 5.33) in the odds of being HIV+ unaware. Finally, our model

indicates those who have health care coverage are significantly less likely (AOR 0.24) to be HIV+ unaware.

Conclusion

- Both intermittent and heavy marijuana use significantly increase the odds of being unaware of one's HIV status. Intermittent use is associated with increased linkage to care. Limited associations with downstream continuum metrics were observed.
- As marijuana becomes further decriminalized and used for medicinal purposes, monitoring of the possible effects of marijuana on the continuum should be considered.

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Table 3. Full RDS-weighted logistic regression model with odds ratios for HIV infected unaware individuals comparing intermittent and heavy marijuana users to those who never use marijuana (N=410)

Variable	n(%)	OR (95% CI)
Marijuana Use (12 mos)		
Never	169 (27.1)	ref
Intermittent ¹	255 (40.9)	3.69 (1.09, 12.56)*
Heavy ²	200 (32.1)	5.33 (1.68, 16.97)**
Age, range (mean)	16-29 (22.8)	1.28 (1.11, 1.47)**
Education		
HS degree	76 (12.2)	ref
Some college	165 (26.5)	1.68 (0.29, 9.90)
Associate/technical degree	284 (45.6)	1.13 (0.17, 7.43)
Bachelors Degree	57 (9.2)	2.97 (0.36, 24.36)
Masters degree	35 (5.6)	0.86 (0.075, 9.73)
Employment Status		
Full-time	153 (24.5)	ref
Part-time	173 (27.7)	0.89 (0.28, 2.72)
Not employed	298 (47.8)	0.98 (0.33, 2.89)
Health Coverage	335 (55.0)	0.24 (0.10, 0.59)**
Homeless Status	158 (25.4)	0.44 (0.15, 1.28)
Depression ³	70 (11.2)	0.40 (0.07, 2.43)
Other Drug Use ⁴	124 (19.8)	0.46 (0.11, 2.01)

* p<0.05, ** p<0.01
¹Intermittent use is defined as anything less than and including weekly use
²Heavy use is defined as at least once per day
³Measured via the Brief Symptom Inventory (BSI-18)
⁴Includes any use of: molly, E, ecstasy, poppers, cocaine, crack, heroin, psychadelics, methamphetamines, prescription pain killers