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Publication Date

2022-12-01

DOI

10.1016/j.dadr.2022.100097

Peer reviewed

Drug and Alcohol Dependence Reports 5 (2022) 100097

Contents lists available at ScienceDirect

Drug and Alcohol Dependence Reports

journal homepage: www.elsevier.com/locate/dadr

Short communication

Methamphetamine use and adoption of preventive behaviors early in the COVID-19 pandemic among men who have sex with men in Los Angeles, California

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ARTICLE INFO

Keywords:
Methamphetamine
COVID-19
MSM
HIV
Substance misuse
Primary prevention

ABSTRACT

Background: Methamphetamine (MA) use increased during COVID-19, with men who have sex with men (MSM) exhibiting 3-fold greater use than heterosexual men. Understanding links between reported MA use and COVID-19 prevention behaviors among MSM can inform current transmission risks for HIV, Monkeypox, and other infectious diseases.

Methods: This study assesses relationships between self-reported pattern of MA use (past six months; past two weeks) and reported COVID-19 preventive behaviors, adjusting for participant characteristics (HIV serostatus, race/ethnicity, employment and housing stability), in a cohort of ethnically diverse MSM in Los Angeles, California, between April 1 and September 30, 2020.

Results: Compared to those who reported no MA use, MSM who reported weekly or more MA use in the past six months were significantly less likely to use COVID-19 protective behaviors of physical distancing (61.8% vs. 81.6%; AOR = 0.39, 95% CI [0.19, 0.81]), of avoiding public transportation (34.5% vs. 60.3%; AOR = 0.42, 95% CI [0.21, 0.83]) and of avoiding traveling overall (32.7% vs. 62.6%; AOR = 0.32, 95% CI [0.16, 0.63]). Parallel findings were observed in analyses of past two-week reported MA use and COVID-19 protective behaviors.

Conclusion: Findings highlight ways in which reported MA use frequency links with avoidance of reported preventive behaviors for COVID-19 in urban diverse MSM. Findings also provide evidence to guide public health interventions in future outbreaks of COVID-19 and other infectious diseases among MSM.

1. Introduction

Methamphetamine (MA) use may be a significant barrier to early prevention responses to newly emerging epidemics such as COVID-19 in men who have sex with men (MSM). Since the start of the COVID-19 pandemic, there has been a dramatic rise in substance use, overdoses, and mental health challenges in the United States (Czeisler et al., 2020), with MA use (and MA-fentanyl co-use) most commonly linked to overdoses in California, particularly in Los Angeles County (Los Angeles County Department of Public Health and Substance Abuse Prevention and Control, 2021; Substance Abuse Prevention and Control (SAPC), 2020). In turn, large scale studies suggest those with a substance use disorder are increasingly susceptible to SARS-CoV-2 infection (Board et al., 2022; Volkow, 2020; Wang et al., 2021).

Historically and currently, MA use has been a significant driver of infectious disease disparities in MSM. MSM experience a heightened risk of MA use compared to heterosexual men (Compton and Jones, 2021), largely due to social inequities (Li et al., 2018; McCabe et al., 2009). MA use – especially with sexual activity – can exacerbate risk of HIV transmission, sexually transmitted infections (STIs), higher viral loads, and immune dysfunction in MSM (Aralis et al., 2018; Chesney et al., 1998; Li et al., 2021; Maxwell et al., 2019; Salamanca et al., 2014), possibly further complicated by the decline in HIV and STI testing during the COVID-19 pandemic (Kuehn, 2022). Now more recently, emerging epidemiological reports point to a new infectious disease threat in MSM, namely, the human monkeypox virus, which has been linked to the use of MA and other psychostimulants with sexual or other activities in-

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https://doi.org/10.1016/j.dadr.2022.100097
Received 1 July 2022; Received in revised form 14 September 2022; Accepted 15 September 2022

Table 1
Participant characteristics and COVID-19 preventive behavior by self-reported methamphetamine use among MSM in Los Angeles, CA (Apr to Sep 2020).

	Past 2-Week Methamphetamine Use (*n*=262)					Past 6-Month Methamphetamine Use (***n***=276)				
	Weekly or More(*n*=39,14.9%)	Less Than Weekly(*n*=27, 10.3%)	None(*n*=196, 74.8%)			Weekly or More(*n*=55,19.9%)	Monthly or Less(*n*=42, 15.2%)	None(*n*=179, 64.9%)		
	M (SD)	M (SD)	M (SD)	F	*p*	M (SD)	M (SD)	M (SD)	F	*p*
Participant Characteristics										
Age (in years)	35.6 (6.7)	35.9 (6.3)	35.6 (7.0)	0.03	.98	36.2 (6.8)	36.1 (6.1)	35.4 (7.0)	0.48	.62
	n (%)	n (%)	n (%)	χ^2	p	n (%)	n (%)	n (%)	χ^2	p
HIV Serostatus				1.88	.39				**6.45**	**< .05**
Positive	22 (56.4%)	16 (59.3%)	94 (48.0%)			35 (63.6%)	26 (61.9%)	84 (46.9%)		
Negative	17 (43.6%)	11 (40.7%)	102 (52.0%)			20 (36.4%)	16 (38.1%)	95 (53.1%)		
Race				**14.20**	**< .05**				6.56	.36
African American/Black	13 (33.3%)	5 (18.5%)	91 (46.4%)			16 (29.1%)	18 (42.9%)	82 (45.8%)		
Hispanic/Latino	15 (38.5%)	14 (51.9%)	77 (39.3%)			27 (49.1%)	16 (38.1%)	69 (38.5%)		
Other	6 (15.4%)	5 (18.5%)	11 (5.6%)			6 (10.9%)	5 (11.9%)	11 (6.1%)		
White	5 (12.8%)	3 (11.1%)	17 (8.7%)			6 (10.9%)	3 (7.1%)	17 (9.5%)		
Education				3.14	.21				3.62	.16
High School or less	18 (46.2%)	15 (55.6%)	76 (38.8%)			25 (45.5%)	22 (52.4%)	67 (37.4%)		
Some College or higher	21 (53.8%)	12 (44.4%)	120 (61.2%)			30 (54.5%)	20 (47.6%)	112 (62.6%)		
Employment				**17.11**	**< .01**				**16.62**	**< .01**
Unemployed/on disability	26 (68.4%)	20 (74.1%)	82 (42.3%)			36 (66.7%)	28 (66.7%)	74 (41.8%)		
Student/caregiver	3 (7.9%)	0 (0.0%)	19 (9.8%)			5 (9.3%)	2 (4.8%)	16 (9.0%)		
Working full or part time	9 (23.7%)	7 (25.9%)	93 (47.9%)			13 (24.1%)	12 (28.6%)	87 (49.2%)		
Housing Stability (*past 6 months*)										
≥ 1 Days Without Stable Housing	12 (30.8%)	10 (37.0%)	20 (10.2%)	**20.09**	**< .01**	15 (27.3%)	11 (26.2%)	20 (11.2%)	**11.09**	**< .01**
No Days Without Stable Housing	27 (69.2%)	17 (63.0%)	176 (89.8%)			40 (72.7%)	31 (73.8%)	159 (88.8%)		
COVID-19 Preventive Behaviors										
Increased Hand-Washing				0.24	.89				**8.59**	**< .05**
Yes	36 (92.3%)	24 (88.9%)	179 (91.3%)			48 (87.3%)	33 (78.6%)	167 (93.3%)		
No	3 (7.7%)	3 (11.1%)	17 (8.7%)			7 (12.7%)	9 (21.4%)	12 (6.7%)		
Increased Physical Distance				**6.27**	**< .05**				**9.61**	**< .01**
Yes	25 (64.1%)	19 (70.4%)	159 (81.1%)			34 (61.8%)	30 (71.4%)	146 (81.6%)		
No	14 (35.9%)	8 (29.6%)	37 (18.9%)			21 (38.2%)	12 (28.6%)	33 (18.4%)		
Avoid Physical Contact				2.51	.29				2.18	.34
Yes	14 (35.9%)	15 (55.6%)	88 (44.9%)			19 (34.5%)	18 (42.9%)	82 (45.8%)		
No	25 (64.1%)	12 (44.4%)	108 (55.1%)			36 (65.5%)	24 (57.1%)	97 (54.2%)		
Covering Nose/Mouth				4.53	.10				5.38	.07
Yes	27 (69.2%)	24 (88.9%)	160 (81.6%)			37 (67.3%)	35 (83.3%)	145 (81.0%)		
No	12 (30.8%)	3 (11.1%)	36 (18.4%)			18 (32.7%)	7 (16.7%)	34 (19.0%)		
Avoid Public Transportation				**16.47**	**< .01**				**14.94**	**< .01**
Yes	11 (28.2%)	10 (37.0%)	118 (60.2%)			19 (34.5%)	16 (38.1%)	108 (60.3%)		
No	28 (71.8%)	17 (63.0%)	78 (39.8%)			36 (65.5%)	26 (61.9%)	71 (39.7%)		
Avoid Traveling				**17.69**	**< .01**				**17.38**	**< .01**
Yes	11 (28.2%)	11 (40.7%)	122 (62.2%)			18 (32.7%)	18 (42.9%)	112 (62.6%)		
No	28 (71.8%)	16 (59.3%)	74 (37.8%)			37 (67.3%)	24 (57.1%)	67 (37.4%)		

Note: Column percentages reported for cross-tabulations between row variables and column variables. Differences in sample size between past 2-week and past 6-month methamphetamine use are due to missing responses.

volving close physical contact (Mailhe et al., 2022; Orviz et al., 2022; Thornhill et al., 2022).

With this in consideration, research is needed to understand how varying degrees of MA use are linked to reduced adoption of public health-recommended preventive behaviors during early stages of public health crises such as COVID-19. Such information may help to explain increased risk for infectious disease transmission and inform prevention efforts in future COVID-19 outbreaks or outbreaks of new infectious diseases. Therefore, this study investigates whether reported patterns of MA use are associated with lower engagement in public health recommendations and behaviors to prevent COVID-19 infection and transmission in racially/ethnically diverse MSM in Los Angeles, California.

2. Method

Research was conducted with oversight by the University of California, Los Angeles South General IRB.

2.1. Study population and sampling methods

The mSTUDY is an ongoing cohort study composed of a racially/ethnically diverse sample of MSM, aged 18–45 at enrollment, who live in Los Angeles County, California. The cohort is, by design, comprised evenly across those who use drugs (one-half documented as using substances at baseline; one-half non-substance using) and HIV status (one-half living with HIV; one-half not living with HIV). The cohort and its original composition are extensively described in previous literature (Aralis et al., 2018). This report includes a cross-sectional analysis of 276 participants from mSTUDY between April 1, 2020 and September 30, 2020 who participated in a remote online survey (with $75 compensation) self-reporting substance use and COVID-19 preventive behaviors.

2.2. Measures

Data analyzed in this study were self-reported and collected using a remote online survey platform. Sociodemographic measures included age, race/ethnicity, level of education, employment status and housing stability.

MA use was assessed during two recall periods – past two weeks and past six months. We asked participants their past two-week MA use with the question, “In the last 2 weeks, how often did you use crystal (glass, meth, amphetamine, Tina, speed)?” with response on a five-point ordinal scale from 1 (“Daily”) to 5 (“Never”). For adequate cell size, past two-week use was collapsed as: “Weekly or more,” “Less than weekly,” and “None.” We assessed past six-month MA use with the question, “In the last 6 months, how often did you use crystal (glass, meth, amphetamine, Tina, speed)?” with response on a six-point ordinal scale from 1 (“Daily”) to 6 (“Never”). Past six-month use was collapsed as “Weekly or more,” “Monthly or less,” and “None.”

COVID-19 preventive behaviors were assessed with the following question, “What precautions are you taking to avoid transmitting the coronavirus (COVID-19)?” Respondents selected all that apply from the following behaviors: “Increased hand-washing and use of hand sanitizer,” “Increased physical distance from strangers,” “Avoid physical contact with everyone (including those I live with or have a close relationship to),” “Covering my nose and mouth in public,” “Avoid public transportation,” and “Avoid traveling.”

2.3. Statistical analyses

Descriptive information about the patient population consisted of cross-tabulations between participant characteristics and methamphetamine use. Bivariable analyses included cross-tabulations and chi-square tests of MA use frequency by COVID-19 preventive behavior, with differences modeled using multivariable binomial logistic regression. Multivariable models adjusted for participant characteristics associated with MA use, including HIV serostatus, race/ethnicity, employment status and housing stability.

3. Results

This analytic sample consisted of 276 mSTUDY participants ranging in age from 20 to 50 years old (M=35.7, SD=6.8), of which 116 (42.0%) and 112 (40.6%) identified as Black/African-American and Latinx respectively; 26 participants (9.4%) identified as White and 22 participants (8.0%) as Other race/ethnicity. HIV-serostatus was mixed with 145 (52.5%) living with HIV and 131 participants (47.5%) not living with HIV. Participants reported varied educational levels ranging from high school or less (41.3%) to some college or higher (58.7%), and 23 participants reported currently being a student or caregiver. Fifty percent reported being currently unemployed or on-disability with 40.6% reporting working full or part-time, and over eighty percent endorsed zero days without stable housing in the past six months.

Table 1 displays participant characteristics and COVID-19 preventive behaviors by MA use, with descriptive and bivariable statistics. A greater proportion of those with HIV reported MA use of any level in both the past two weeks and past six months than those without HIV. Significant differences in employment status and housing stability also varied by level of reported MA use in both time intervals, as did reported engagement in social distancing, avoidance of public transportation, and avoidance of traveling. Reported hand-washing only varied by MA use in the past six months.

Table 2 reports the adjusted odds ratios of COVID-19 preventive behaviors by MA use frequency. The full multivariable models with covariate regression estimates are available in the Supplemental Table (link).

Table 2
Multiple regression models of past two-week and six-month methamphetamine use on COVID-19 preventive behaviors among MSM in Los Angeles, CA (Apr to Sep 2020).

	Hand Washing AOR[a] (95% CI)	*p*	Physical Distance AOR[a] (95% CI)	*p*	Avoid Public Transportation AOR[a] (95% CI)	*p*	Avoid Traveling AOR[a] (95% CI)	*p*
Past 2-Week Methamphetamine Use								
Weekly or more	1.33 (0.35, 5.10)	.68	0.45 (0.20, 1.01)	.05	**0.30 (0.13, 0.67)**	**< .01**	**0.26 (0.12, 0.59)**	**< .01**
Less than weekly	0.85 (0.20, 3.59)	.83	0.59 (0.22, 1.61)	.30	0.48 (0.19, 1.18)	.11	0.48 (0.20, 1.16)	.10
None	ref	–	ref	–	ref	–	ref	–
Past 6-Month Methamphetamine Use								
Weekly or more	0.53 (0.18, 1.50)	.23	**0.39 (0.19, 0.81)**	**< .05**	**0.42 (0.21, 0.83)**	**< .05**	**0.32 (0.16, 0.63)**	**< .01**
Monthly or less	**0.28 (0.10, 0.75)**	**< .05**	0.68 (0.30, 1.55)	.36	**0.47 (0.23, 0.96)**	**< .05**	0.51 (0.25, 1.05)	.07
None	ref	–	ref	–	ref	–	ref	–

Note: Past 2-week methamphetamine use and past 6-month methamphetamine use are modeled separately. All models adjust for HIV status, race/ethnicity, housing stability, and employment status. See Supplemental Table for the full models.

[a] AOR = adjusted odds ratio

Compared to those who reported no MA use, MSM who reported weekly or more MA use in the past six months reported less: physical distancing (61.8% vs. 81.6%; AOR = 0.39, 95% CI [0.19, 0.81], $p < 0.05$), avoidance of public transportation (34.5% vs. 60.3%; AOR = 0.42, 95% CI [0.21, 0.83], $p < 0.05$) and avoidance of traveling (32.7% vs. 62.6%; AOR = 0.32, 95% CI [0.16, 0.63], $p < 0.01$) when compared to those who did not report MA use. Parallel findings were noted among those who reported weekly or more MA use in the past two weeks (see Table 2). Housing stability was found to be a significant covariate on reported avoidance of public transportation and traveling. HIV status, race/ethnicity, and employment were not significantly associated with any COVID-19 preventive behaviors.

4. Discussion

Findings show consistent patterns of greater frequency of self-reported past two-week and past six-month MA use corresponding to significantly lower reports of COVID-19 preventive behaviors during the early stages of safer-at-home orders. Adoption of public health recommendations for prevention are vital during the start of a public health crisis and may be particularly difficult in diverse urban MSM who use MA. Now emerging variants of SARS-CoV-2 increasingly underscore the value of primary prevention behaviors (Chen et al., 2022; Levin et al., 2021; Levine-Tiefenbrun et al., 2021). Moreover, people with a substance use disorder exhibit increased risk of COVID-19 infection, experience substance related comorbidities (e.g. pulmonary damage, cardiomyopathy), and face access barriers due to social determinants of health that contribute to poorer outcomes (Board et al., 2022; Volkow, 2020; Wang et al., 2021).

Findings also point to the importance of reported recent and chronic use of MA as a marker for health risk behaviors, especially when used with sexual activity (Giorgetti et al., 2017; Mailhe et al., 2022; Maxwell et al., 2019; Orviz et al., 2022; Salamanca et al., 2014; Thornhill et al., 2022). Recognizing the ways MA use intersects with psychosocial, behavioral, and biological factors of health in urban diverse MSM is a first step toward improving efforts to encourage active involvement in behavioral prevention for COVID-19, HIV, monkeypox, or future infectious diseases. This is especially relevant given the known limitations in support services during a pandemic, be it in-person peer support groups, access to internet or the perceived, diminished level of social support for those willing to try mobile services (Hubach et al., 2021; Volkow, 2020).

Our findings provide further evidence that reduced MA use – not just abstinence – may improve health outcomes (Shoptaw et al., 2022), in this case, adoption of public health recommendations for prevention behaviors. It is unclear whether the relationship between reported MA use, COVID-19 preventive behaviors and other public health behaviors is static or changes over time. Moreover, the impact of other substances (e.g. opioids, cocaine, cannabis) on COVID-19 preventive behaviors and other health recommendations among MSM should be further studied.

Though our findings suggest lower levels of MA use may have benefits for COVID-19 preventive behaviors among MSM who use this drug, implications may be limited. Our study is limited by its cross-sectional study design and an absence of biomarkers of substance use during safer-at-home orders. Findings may not generalize to communities and populations outside of our sample of MSM in Los Angeles, CA. Still, our study provides specific evidence for how MA use frequency can correspond with adoption of public health recommendations, which may in turn affect responses to future infectious disease spread in urban, diverse MSM.

Role of funding source

Nothing declared.

Contributors

All authors have materially contributed to the enclosed research and attest to the veracity and accuracy of the findings herein.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgments

This research is supported by the National Institute on Drug Abuse (U01DA036267, U24DA044554, K01DA051329) and National Institute of Mental Health (P30MH058107).

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.dadr.2022.100097.

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