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Trends in methamphetamine use in young injection drug users in San Francisco from 1998 to 2004: the UFO Study

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Abstract

Aims—To describe temporal trends in methamphetamine use among young injection drug users (IDU) in San Francisco.

Design and Methods—Secondary analysis of cross-sectional baseline data collected for a longitudinal study of young IDU from 1998 to 2004. Participants were 1445 young IDU (< 30 years old) who reported injection in the previous month, English-speaking, and recruited by street outreach methods. We examined trends for: lifetime (ever) and recent (30-day) methamphetamine use, including injected and non-injected, and by age group and sexual risk behaviour [men who have sex with men injecting drug users (MSM-IDU), male IDU (non-MSM) and female IDU].

Results—In 1998, 1999, 2000, 2001, 2003 and 2004 we interviewed 237, 276, 431, 310, 147 and 44 participants, respectively. Overall, median age was 22 years [interquartile range (IQR) 20 – 25], 30.3% were women and median duration of injecting was 4.4 years (IQR 2 – 7). Prevalence of methamphetamine use was high, with 50.1% reporting recent injection, but overall there were no temporal increases in reported ‘ever’ injected use. Recent methamphetamine injection (past 30 days) increased significantly, and peaked at 60% in 2003. MSM-IDU had higher methamphetamine injection ever (92.3%) and recently (59.5%) compared to heterosexual male (non-MSM) IDU (81.6% and 47.3%, respectively) and to female IDU (78.4% and 46.1%, respectively).

Conclusions—Despite reports of ubiquitous increases in methamphetamine use, there were no significant increases in 6 years in ever injecting methamphetamine overall among young IDU. MSM-IDU who reported the highest methamphetamine use overall reported some increases in recent injected use. The methamphetamine ‘epidemic’ was probably under way among young IDU earlier than other populations.

Keywords

injection drug use; methamphetamine; MSM-IDU; prevalence; trends; young injectors

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Introduction

In the United States, methamphetamine use grew rapidly in the 1990s and became a significant public health concern nationally. Chronic use is associated with significant negative acute and chronic health, psychiatric and social consequences [1 – 9], and methamphetamine users are among the most difficult drug treatment patients [10]. In certain populations, including men who have sex with men (MSM), methamphetamine is associated with high-risk sexual and injection behaviors and elevated human immunodeficiency virus (HIV) rates [4,11 – 14]. In the United States, the spotlight on methamphetamine use has been especially intense as it has become more widespread, particularly among white, middle-class youth and young adults [15 – 17]. Groups experiencing increases, however, appear to be heterogeneous, including Hispanic and Asian populations, male and female sex workers, transgendered people, high-school and college students and farm workers [15,18,19]. Nationally, indicators of escalating methamphetamine use in the last decade include increases in: admissions to publicly funded drug treatment programmes [20]; emergency department reports involving methamphetamine [21]; and the percentage and numbers of arrestees testing positive for methamphetamine [22]. In California, methamphetamine-related admissions to drug treatment programmes increased 363% from 1992 to 2005 [20].

In San Francisco, street-based youth and young adults have historically had high exposure to methamphetamine [23 – 26]. In some of the only trend data available in San Francisco, methamphetamine use among marginally housed and homeless adults tripled overall between 1996 and 2003, but quadrupled in the younger groups (< 35 years) [27]. From 1989 to 2004 methamphetamine use (past 30-day recall) increased from 24% to 37% among older injection drug users (IDU) [28]. As the public health literature and lay press have published widely on increases in methamphetamine use in the United States, in particular among youth, we hypothesised that methamphetamine use increased among young IDU. Here we examine longitudinal trends in reported methamphetamine use from cross-sectional data collected serially from ongoing study of young IDU in San Francisco, California.

Methods

Population

Young IDU were recruited from 1998 to 2001 and 2003 to 2004 to participate in the UFO Study (at the study's inception, the acronym represented 'U Find Out' (serostatus); details and recruitment procedures are described in detail in [29]) in San Francisco, California, using targeted street outreach methods. In brief, young IDU were recruited by peer outreach workers to screen for participation in prospective epidemiological studies of HIV, hepatitis B and C virus (HBV and HCV) infections. In 1999 only, snowball sampling methods were added, wherein participants were asked to refer other known young IDU. In all years, eligible participants were under age 30, reported injection in the previous month and were English-speaking. A baseline structured interview assessing self-reported behavioural risk and drug exposures was administered, followed by counselling and testing for HIV, HBV and HCV. Participants were reimbursed for interview time and returning for test results. We examined temporal trends in self-reported injected and non-injected methamphetamine at baseline interview.

Methamphetamine use variables

For all years, data were examined regarding recent (past 30 days) or 'ever' self-reported injected methamphetamine. Regarding non-injection use of methamphetamine, in addition to

'ever' use, participants were asked about use in the past year (in 1998 and 1999) and use in the past 3 months (2000, 2001, 2003 and 2004).

Analyses

Summary statistics were calculated for selected sociodemographic and risk exposures. Yearly trends in methamphetamine use were examined overall, as well as by age group [≥ 22 compared to > 22 (cut-offs were based on median age of the sample)] and sexual risk group (MSM-IDU, male non-MSM-IDU and female IDU), using χ^2 tests for trend. All analyses were conducted using stata 9.0 (STATA Corporation, College Station, TX, USA).

Results

Participants were interviewed in 1998 ($n = 237$), 1999 ($n = 276$), 2000 ($n = 431$), 2001 ($n = 310$), 2003 ($n = 147$) and 2004 ($n = 44$) (Table 1). Overall, median age of participants was 22 years [interquartile range (IQR) 20, 25], the majority reported injecting daily (64.5%), was male (69.7%) and most (83.5%) reported not being housed the previous night. The median number of reported years of injecting was four (IQR, 2, 7). Prevalence of HIV, HBV and HCV infections were 3.5%, 20.9% and 38.8%, respectively.

Table 2 shows the proportion of respondents reporting ever and recent injection and non-injection methamphetamine use: overall, by year and stratified by gender/risk and age groups. A majority (83.7% overall) of participants reported having ever injected methamphetamine; no significant changes were observed over time for ever injecting methamphetamine in any subgroup. Overall, a higher proportion of MSM-IDU reported having ever injected methamphetamine (92.3%) compared to male (non-MSM) IDU (81.6%) and female IDU (78.4%), and over most years (Figure 1). Injected methamphetamine in the past 3 months showed similar patterns. Statistically significant temporal differences ($p = 0.01$) were seen with respect to recent methamphetamine injection (past 30 days) among MSM-IDU and older (>22 years) participants, with a nadir in 1999 and a peak in reported use in 2003, which was consistent across all groups.

Non-injection methamphetamine use 'ever', which could include smoking and snorting, was reported by almost all participants (91.8%). Significant declines are seen over time in the overall sample ($p < 0.01$), consistent across all subgroups, except from 2003 to 2004, when those aged 22 and older reported a slight increase. Reported non-injection use in the previous 3 months varied significantly overall, with the highest proportion (62.3%) in 2003 ($p = 0.01$); the same trends were seen in all subgroups, but were significant only among females (0.03) and those 22 years and older (0.04). Declines seen in non-injection use of methamphetamine were not associated with any observed increases in injection use. As with injected methamphetamine, a higher proportion of MSM compared to males (non-MSM) and females reported recent non-injection use, but differences were not significant (Figure 2).

Discussion

Among young IDU in San Francisco, methamphetamine use has been very high since 1998 and continuing through 2004. In general, no temporal increases were observed in reported methamphetamine injection with respect to lifetime (ever) use; however, very recent (past 30 days) use increased significantly, corresponding to a nadir in 1999 and peak in 2003. Reported recent use in all other years varied little, between 50% and 60%. The declines observed in 1999 may be associated with the modified sampling methods (resulting in fewer methamphetamine users). Significant declines were noted in non-injection use for lifetime 'ever' recall, but not for shorter recall periods. The results suggest that the

'methamphetamine epidemic' was under way among young IDU earlier than among other populations. The proportion of young San Francisco IDU reporting methamphetamine use was radically higher than that reported by young IDU in Vancouver, where methamphetamine injection prevalence was 6.7% in 2004 [30].

The higher reported use of methamphetamine among the MSM subgroup in this sample of young IDU compared to male (non-MSM) and female IDU corroborates other reports of increased methamphetamine use among MSM, especially younger ones, in San Francisco [12]. These increases corresponded to elevated rates of HIV, which are attributed largely to higher-risk sexual exposures [31 – 33], including trading sex for drugs [34], which may be practised to obtain methamphetamine [35] in this high-risk group.

Findings from this study have the following potential limitations. First of all, these are secondary data analyses; the UFO studies were designed principally to examine disease outcomes associated with injection-related exposures. The consistency of the data suggest that, over time, few if any differential reporting occurred, even with respect to sexual risk and age groups. Even in 1999, when reported recent injected methamphetamine was lowest, the results did not vary by group. These factors suggest that the data are not highly compromised.

This study contributes to the literature of drug use among young high-risk IDU, which lacks population-based documentation on temporal trends in types, frequency and methods of administration. Methamphetamine among young IDU in San Francisco is higher than other locales and other groups; it is likely to contribute to the high morbidity and mortality of young IDU, as well as increased risk for HIV in association with both elevated sexual and injection related risks [30,36 – 39]. These data show the continued urgent need for methamphetamine prevention and intervention programmes targeted toward young IDU.

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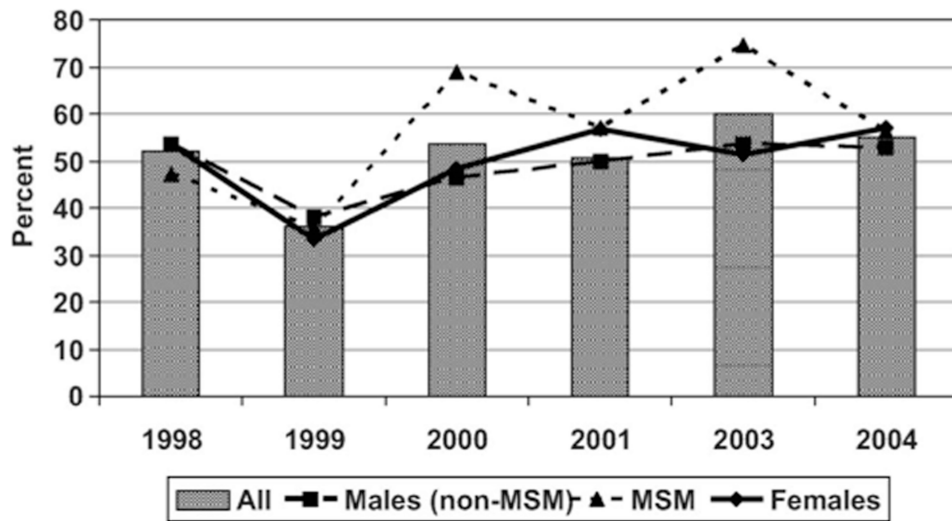


Figure 1. Trends in self-reported injected methamphetamine use in the last 30 days among young IDU in San Francisco by year and by sexual risk group.

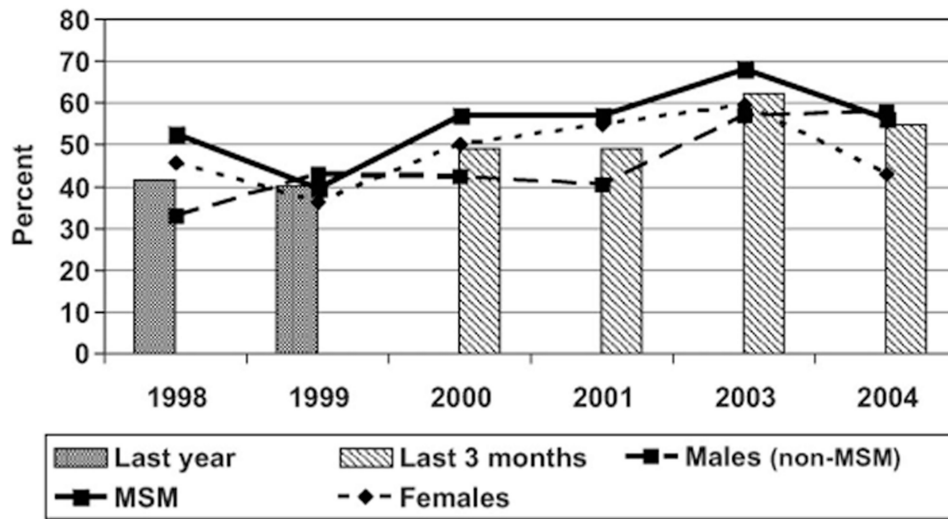


Figure 2. Trends in self-reported non-injected methamphetamine use among young IDU in San Francisco by year and by sexual risk group.

Table 1
Characteristics and prevalence of selected risk exposures among of young IDU in San Francisco (1998 – 2004)

Characteristics	Total (n = 1445) n (%)
Median age (IQR)	22.0 (20 – 25)
Gender	
Male	1007 (69.7)
Female	438 (30.3)
Race/ethnicity	
Caucasian	1132 (79.0)
Non-Caucasian	301 (21.0)
Sexual risk group	
MSM	359 (25.0)
Male (non-MSM)	640 (44.5)
Female	438 (30.5)
Housing last night	
No	1044 (72.7)
Yes	392 (27.3)
Education	
<High school	721 (50.2)
High school	443 (30.9)
>High school	272 (18.9)
Median number of years injecting (IQR)	4.4 (2 – 7)
Injected every day last 30 days	
No	934 (64.8)
Yes	507 (35.2)

IQR: interquartile range; MSM: men who have sex with men.

Table 2
Trends in injection and non-injection methamphetamine use from 1998 to 2004 by sexual risk and age group in young injectors in San Francisco (n = 1445)

	Total n (%)	1998 N = 237	1999 N = 276 n (%)	2000 N = 431 n (%)	2001 N = 310 n (%)	2003 N = 147 n (%)	2004 N = 44 n (%)	p-value for trend
Injected methamphetamine ever (yes)								
All	775 (83.7)		364 (84.7)	253 (81.9)	122 (84.7)	36 (83.7)	0.94	
Female	214 (78.4)		102 (81.6)	78 (74.3)	28 (77.8)	6 (85.7)	0.77	
Male (non-MSM)	315 (81.6)		143 (80.8)	110 (82.1)	46 (83.6)	16 (80.0)	0.66	
Male MSM	241 (92.3)		119 (93.0)	65 (92.9)	43 (91.5)	14 (87.5)	0.49	
22	375 (81.5)		181 (84.2)	142 (78.9)	37 (77.1)	15 (88.2)	0.48	
>22	400 (85.8)		183 (85.1)	111 (86.1)	85 (88.5)	21 (80.8)	0.78	
Injected methamphetamine in last 3 months (Yes)								
All	539 (58.2)		251 (58.2)	165 (53.6)	99 (68.3)	24 (57.1)	0.12	
Female	143 (52.0)		67 (53.2)	51 (48.6)	21 (56.8)	4 (57.1)	0.33	
Male (non-MSM)	209 (54.3)		93 (52.5)	72 (53.7)	33 (60.0)	11 (57.9)	0.72	
Male MSM	182 (70.0)		91 (71.1)	42 (60.9)	40 (85.1)	9 (56.3)	0.54	
22	260 (56.4)		120 (55.6)	98 (54.4)	32 (66.7)	10 (58.8)	0.27	
>22	279 (60.0)		131 (60.9)	67 (52.3)	67 (69.1)	14 (56.0)	0.38	
Injected methamphetamine last 30 days (yes)								
All	719 (50.1)	123 (52.1)	99 (36.1)	231 (53.6)	156 (50.5)	87 (60.0)	23 (56.1)	<0.01
Female	200 (46.1)	37 (53.6)	30 (33.3)	61 (48.4)	49 (46.7)	19 (51.4)	4 (57.1)	0.36
Male (non-MSM)	302 (47.3)	60 (53.6)	54 (38.0)	82 (46.3)	67 (50.0)	29 (52.7)	10 (55.6)	0.48
Male MSM	213 (59.5)	26 (47.3)	15 (35.7)	88 (68.8)	40 (57.1)	35 (74.5)	9 (56.3)	<0.01
22	372 (49.3)	71 (56.4)	61 (36.3)	111 (51.4)	91 (50.6)	29 (60.4)	9 (56.3)	0.17
>22	347 (50.9)	52 (47.3)	38 (35.9)	120 (55.8)	65 (50.4)	58 (59.8)	14 (56.0)	0.01
Non-injection methamphetamine ever (yes)								
All	851 (91.8)		407 (94.4)	283 (91.3)	125 (87.4)	36 (83.7)	<0.01	
Female	251 (91.6)		120 (95.2)	95 (89.6)	31 (88.6)	5 (71.4)	0.06	
Male (non-MSM)	352 (91.2)		165 (93.2)	122 (91.0)	49 (89.1)	16 (80.0)	0.03	
Male MSM	243 (93.1)		122 (95.3)	66 (94.3)	40 (85.1)	15 (93.8)	0.06	
22	424 (91.8)		206 (95.4)	163 (90.1)	40 (83.3)	15 (88.2)	<0.01	
>22	427 (91.8)		201 (93.5)	120 (93.0)	85 (89.5)	21 (80.8)	0.03	

	Total n (%)	1998 N = 237	1999 N = 276 n (%)	2000 N = 431 n (%)	2001 N = 310 n (%)	2003 N = 147 n (%)	2004 N = 44 n (%)	p-value for trend
Non-injection methamphetamine use last year* (yes)								
All	209 (40.7)	98 (41.4)	111 (40.2)	--	--	--	--	0.79
Female	65 (40.4)	32 (45.7)	33 (36.3)					0.07
Male (non-MSM)	98 (38.6)	37 (33.0)	61 (43.0)					0.09
Male MSM	46 (46.9)	29 (52.7)	17 (39.5)					0.12
22	138 (46.5)	65 (51.2)	73 (42.9)					0.04
>22	71 (32.9)	33 (30.0)	38 (35.9)					0.47
Non-injection methamphetamine last 3 months† (yes)								
All	478 (51.4)			211 (49.0)	152 (49.0)	91 (62.3)	24 (55.8)	0.01
Female	147 (53.3)			63 (50.0)	58 (54.7)	23 (62.2)	3 (42.9)	0.03
Male (non-MSM)	172 (44.6)			75 (42.4)	54 (40.3)	31 (56.4)	12 (60.0)	0.39
Male MSM	154 (59.0)			73 (57.0)	40 (57.1)	32 (68.1)	9 (56.3)	0.35
22	243 (52.5)			110 (50.9)	91 (50.3)	31 (63.3)	11 (64.7)	0.09
>22	235 (50.3)			101 (47.0)	61 (47.3)	60 (61.9)	13 (50.0)	0.04

* In 1998 and 1999, participants were asked about non-injection use in the past year;

† In 2000 – 04, participants were asked about non-injection use in the past 3 months. IQR: interquartile range; MSM: men who have sex with men.