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## Heroin Use and Sex: Some Patterns in Miami-Dade County, Florida

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# Heroin Use and Sex: Some Patterns in Miami-Dade County, Florida

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## ABSTRACT

*Much of the literature on heroin and opioid addiction holds that regular, long-term users of heroin and other opioids lose interest in sex as their drug using careers lengthen. Analysis of self-reports collected from IDUs in two cross-sectional surveys on patterns of risk behavior in Miami-Dade County, Florida, reveals that large proportions of IDUs report using heroin before or during sex across a wide range of self-injection experience, from as little as twelve months to over 40 years. One half or more of respondents to both surveys reported using heroin in their recent sexual experiences, with similar proportions reported by both males and females. The same IDUs, however, tend not to report using prescription painkillers before or during sex. This finding indicates that co-occurring risk behavior related to both sexual behavior and heroin use may be more prevalent among long-term IDUs than previous literature has suggested.*

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## BACKGROUND

Various studies have examined the relationship between drug use and sexual behavior (Benotsch et al., 2011; Johnson et al., 2013; Rawson et al., 2002; Ross & Williams, 2001), and their primary conclusion has been that opioids, both illicit ones such as heroin and prescription ones such as OxyContin, have a dampening effect on sexual desire or appetite. Some reports (e.g., Ross & Williams, 2001) attribute sexual stimulation to use of stimulants, such as methamphetamine or cocaine, but those that report primarily on the use of heroin and prescription opioids in connection with sexual behavior (Rhodes et al., 1998; Rigg & Murphy, 2013; Young et al., 2012) conclude that use of opioids results in loss of libido and impaired sexual performance.

The literature on whether or not use of opioids enhances the sexual experience of opioid users is sparse, and much of what has been written focuses on how the drugs affect the sex drive and performance of long-term users. The existing literature also depends heavily on retrospective commentary by heroin users elicited while in treatment for addiction (Bang-Ping 2009; De Leon & Wexler 1973; La Pera et al., 2003; Palha & Esteves, 2002; Palha & Esteves

2008; Rawson et al., 2002). With the exception of their sexual experience during incipient heroin use (Palha & Esteves, 2008), consumers of heroin in most of these studies reported effects on sexual function that were consistently negative. Nevertheless, the notion that opioid drugs have quasi-orgasmic effects, and that sexual pleasure can be enhanced by use of opioids in conjunction with sexual activity is actually old (Pfaus & Gorzalka 1987), dating back to the 1560s and the writings of Garcia D'Orta (Guerra, 1974). Physicians and early writers often likened the effects of opioids to sexual orgasm (John Jones quoted in Pfaus & Gorzalka 1987).

These accounts make it clear that for a long time physicians and other people who commented on the effects of laudanum, morphine, and eventually heroin made a connection between the experience of sexual orgasm and the acute effects of large doses of opioid preparations. Pfaus and Gorzalka (1987), in their comprehensive review paper on this topic, distinguish between the effects of acute intoxication by opioids and the effects of long-term, regular use of these drugs. The sexual enhancement effects of opioids occurred in the reviewed studies primarily in opioid naïve or novice experimenters with this class of drug

(Palha & Esteves, 2002; Palha & Esteves 2008). At an early stage in the careers of some opioid users, this class of drug had apparently been attractive to prospective users as an enhancer of sex. The studies conducted by Palha and Esteves (2002; 2008) revealed that up to one-third of the respondents had been attracted to heroin use in part as a sexually enhancing drug. La Pera et al. (2003) found that one-fifth of the respondents in their study of heroin users had reported sexual dysfunction before beginning to take heroin. These findings suggest that some younger heroin users might have become involved in taking heroin for the purpose of dealing with sexual dysfunction. A subset of both male and female heroin users in the study conducted by Palha and Esteves (2008) persisted in using heroin as an enhancer of sexual pleasure. The nature of this enhancement involved a combination of arousal, disinhibition, removal of insecurity, and delay of ejaculation.

These findings raise questions with regard to the variation in how heroin users incorporate heroin use into their sexual lives and at what point the heroin makes them no longer interested in sex at all. In addition, it could be useful to pose these questions to a database elicited from active heroin users rather than recovering treatment patients.

### **Purpose**

In a behavioral surveillance study of people at risk for exposure to HIV, respondents have reported that they used heroin during sexual experiences in the previous 12 months. The present paper uses the behavioral surveillance data from two rounds of the National HIV Behavioral Surveillance (NHBS) carried out in Miami-Dade County, Florida, to characterize this response to heroin use during sex in terms of socio-demographics and user lifestyles.

### **METHODS**

Data presented in this paper was collected in Miami-Dade County, Florida, as part of the Centers for Disease Control and Prevention-funded National HIV Behavioral Surveillance system (NHBS). NHBS is conducted among three target populations at increased risk of HIV infection: men who have sex with men (MSM), injection drug users (IDU), and heterosexuals at increased risk of HIV infection (HET). These three target populations are systematically sampled in recurring cycles, with each target population resampled every three years, referred to as a "round." The interviews are anonymous so there is no record of who is sampled from one year to the next, thus, this is not a longitudinal repeated survey of the same respondents over time. Rather, it is three cross-sectional surveys of IDUs (IDU1, IDU2, and IDU3). This paper

analyzes data collected during two rounds of NHBS among Injection Drug Users: NHBS-IDU2 in 2009 and NHBS-IDU3 in 2012. For each round, respondent-driven sampling (RDS), was used to recruit over 500 study respondents each study round. In each survey, trained interviewers conducted face-to-face interviews, using a multisite protocol created by the CDC. All data were collected anonymously, focusing on sexual risk, alcohol and drug use behaviors and HIV testing and treatment. Rapid HIV testing was conducted after the interviews using a blood sample collected via finger stick for both NHBS-IDU2 and NHBS-IDU3. For those who were reactive or self-reported HIV-positive status, a confirmatory Western blot test was conducted. Eligible respondents for all NHBS-IDU cycles were residents of Miami-Dade County, Florida, were male or female (not transgender), reported injection drug use during the 12-month period prior to the date of the interview, were at least 18 years of age, and provided informed consent. Respondents for all cycles received \$25 for their time to complete the interview and \$25 for their time to complete the HIV test. Respondents eligible to recruit others for the survey received \$10 for each eligible recruit that completed the survey up to \$50 total for five referrals, in keeping with Heckathorn's (Heckathorn, Broadhead & Sergeev, 2001; Heckathorn, 2002) principles of respondent-driven sampling (RDS). A detailed description of the NHBS-IDU study methodology has been reported elsewhere (Lansky et al., 2007).

In response to the survey, respondents reported their age the first time they injected drugs. This age could be subtracted from their age at the date of the interview to obtain an estimate in years of the duration of the drug using career of each respondent. This measure was then categorized into deciles of less than 12 months to 40 or more years. The surveys also included questions about the different drugs used before or during the last sexual encounter within the past 12 months as well as the date of last sex with male and female sex partners. For both rounds the following questions were asked: "Before or during the last time you had sex with this partner, did you use alcohol, drugs, both alcohol and drugs, or neither one?" Respondents who reported using drugs before or during last sex within the past 12 months were then asked a multiple choice question to identify which drugs were used before or during the respondent's last sexual encounter. The possible drugs included: marijuana, speedball (heroin and cocaine used together), heroin, crack cocaine, powder cocaine, crystal methamphetamine, X or ecstasy, special K or ketamine, GHB, pain killers (OxyContin, Vicodin, Percocet), downers (Valium,

Ativan, Xanax), and other drugs. Respondents were asked these questions separately for last sexual encounter with a male partner with the past 12 months and last sexual encounter with a female partner within the past 12 months. The characteristics of all IDU for NHBS-IDU2 and NHBS-IDU3 and of those who reported heroin before or during last sex within the past 12 months are presented in Table 1. The proportions of respondents who reported using heroin before or during last sex within the past 12 months were obtained for NHBS-IDU2, NHBS-IDU3 and NHBS-IDU2 & NHBS-IDU3 combined and are presented in Table 2. The proportions of respondents who reported using prescription pain killers before or during last sex within the past 12 months were obtained for cross-sectional surveys NHBS-IDU2, NHBS-IDU3 and NHBS-IDU2 and NHBS-IDU3 combined and are presented in Table 3.

We first give, in Table 1, percentages of different demographic characteristics within all IDU in the whole sample and then the proportion within those who used heroin before or during last sex in the past 12 months for both the NHBS-IDU2 and NHBS-IDU3 rounds. In Table 2, we examined proportions of those using heroin with sex within the respondent's gender and the respondent's partner's gender, specific to the years of IDU exposure. This was done for males reporting sex with females, males reporting sex with males, females reporting sex with males and overall for both NHBS-IDU2 and NHBS-IDU3 rounds combined. We used a chi-square analysis of proportions to determine if exposure time was related to the proportion of IDU users who reported using heroin before or during their last sexual encounter in the past 12 months, more or less or equally, across the exposure time. For the males, for example, did those groups that had different length of exposure to heroin have differences in the proportion of those using heroin with sex. The chi-square test of linear relationship (either increasing or decreasing) in the proportion was used, which would detect if there was a cumulative effect of increasing time of exposure on proportions using heroin with sex, which, if you followed the assumption of the previous reports, would show as a decreasing downward gradient of the proportions in the table (i.e., less IDUs would use during sexual encounters the longer they used). These tests were also conducted for the use of prescription opioids during last sex in the past 12 months (Table 3).

Although all respondents in this paper reported sex with heroin within the past 12 months, we also analyzed time since last sex for any patterns. We present the means and standard deviations of time since last sex with heroin overall and within one of

the decile groups of duration of injection that was significant.

All analyses are based on un-weighted data and a p-value less than or equal to .05 was considered statistically significant. SAS 9.3 was used for all analyses.

## RESULTS

The sample characteristics were similar across both rounds of NHBS-IDU (Table 1). Both samples were mostly distributed across the 30-39 (IDU2 19%; IDU3 24.9%), 40-49 (IDU2 30.8%; IDU3 27.4%) and 50+ (IDU2 42.2%; IDU3 32.2%) age groups, with smaller numbers among the 18-22 (IDU2 0.8%; IDU3 3.1%) and 23-29 (IDU2 7.3%; IDU3 12.5%) age groups. The IDU2 sample was 19.7 percent white (males 16.9%, females 28.7%), 39.7 percent Black (males 39.8%, females 39.2%), 38.9 percent Hispanic (males 42%, females 28.7%) and 1.8 percent other (males 1.3%, females 3.5%). The IDU3 sample was 28.2 percent white (males 22.3%, females 44.3%), 26.2 percent Black (males 27.8%, females 22.1%), 44.6 percent Hispanic (males 49.2%, females 32.1%) and 1 percent other (males 0.8%, females 1.4%).

Most respondents were born in the US (IDU2 males 69%, females 90.9%; IDU3 males 71.9%, females 86.4%). Many respondents reported being homeless during the past 12 months (IDU2 males 19.1%, females 21.7%; IDU3 males 21.7%, females 25%) or currently homeless (IDU2 males 50.3%, females 41.3%; IDU3 males 46.1%, females 40.7%). Level of education was similar for men and women and across both rounds of IDU with 35.6% of IDU2 and 36.2% of IDU3 reporting less than 12 grade education, 39.2% of IDU2 and 36.2% of IDU3 reporting completing high school or GED, and approximately 22.7% of IDU2 and 23.6 of IDU3 reporting completing some college, an associate's degree, or technical training. Annual income was also similar for both male and female respondents across both rounds of IDU with 85.3% of IDU2 and 80.5% of IDU3 reporting annual incomes between \$0 and \$19,000 and 9.6% of IDU2 and 13.4% of IDU3 reporting annual incomes between \$20,000 and \$39,000.

Table 2 displays the relationship of time since IDU exposure and the proportion using heroin before or during sex in their last sexual encounter in the past 12 months. In general, over half of all heroin users report using heroin before or during their last sexual encounter within the past 12 months, with 60.8 percent of all IDUs for IDU2, 57.6 percent of all IDUs for IDU3, and 59.3 percent of all IDUs for both rounds combined (Table 2). The use of prescription pain killers before or during last sex, as reported in

**Table 1**  
**Characteristics of Persons Using Heroin before or during Last Sex and All IDU for NHBS-IDU2 and NHBS-IDU3**

		IDU2		IDU3	
		All IDU	Heroin with last sex	All IDU	Heroin with last sex
<b>Gender</b>	Male	462(76.5)	276(75)	381(73)	211(70.1)
	Female	142(23.5)	92(25)	141(27)	89(29.6)
<b>Age</b>	18-22	5(0.8)	3(0.8)	16(3.1)	11(3.7)
	23-29	44(7.3)	23(6.3)	65(12.5)	41(13.6)
	30-39	115(19)	76(20.7)	130(24.9)	75(24.9)
	40-49	186(30.8)	121(32.9)	143(27.4)	72(23.9)
	50+	255(42.2)	145(39.4)	168(32.2)	101(33.6)
<b>Race</b>	White	119(19.7)	78(21.2)	147(28.2)	92(30.6)
	Black	240(39.7)	146(39.7)	137(26.2)	81(26.9)
	Hispanic	235(38.9)	139(37.8)	233(44.6)	125(41.5)
	Other	11(1.8)	5(1.4)	5(1)	3(1)
<b>Country of birth</b>	US	448(74.2)	274(74.5)	395(75.7)	241(80.1)
<b>Homelessness</b>	Never homeless	194(32.1)	116(31.5)	171(32.8)	94(31.2)
	Within 12 months but not currently	119(19.7)	78(21.2)	118(22.6)	124(41.2)
	Currently homeless	291(48.2)	174(47.3)	233(44.6)	82(27.2)
<b>Education</b>	Less than 12th grade	215(35.6)	129(35.1)	189(36.2)	107(35.5)
	High school or GED	237(39.2)	144(39.1)	189(36.2)	112(37.2)
	Some college, Associates Degree, or tech degree	137(22.7)	84(22.8)	123(23.6)	70(23.3)
	Bachelor's Degree	11(1.8)	8(2.2)	16(3.1)	8(2.7)
	Any post graduate study	4(0.7)	3(0.8)	5(1)	3(1)
<b>Annual income</b>	0 to \$19,999	515(85.3)	309(84)	420(80.5)	237(78.7)
	\$20,000 to \$39,999	58(9.6)	38(10.3)	70(13.4)	43(14.3)
	\$40,000 to \$74,999	21(3.5)	13(3.5)	24(4.6)	14(4.7)
	\$75,000 or more	10(1.7)	8(2.2)	8(1.5)	6(2)
<b>Frequency of heroin use</b>	More than once a day	454(75.0)	288(78.3)	437(83.6)	264(87.7)
	Once a day	48(7.9)	28(7.6)	39(7.5)	18(6.0)
	More than once a week	58(9.6)	37(10.0)	33(6.3)	15(4.98)
	Once a week	11(1.8)	4(1.1)	2(0.4)	2(0.7)
	More than once a month	20(3.3)	7(1.9)	8(1.5)	2(0.7)
	Once a month	5(0.8)	1(0.3)	3(0.6)	0(0)
	Less than once a month	5(0.8)	2(0.5)	0(0)	0(0)
<b>Total</b>		605	368	522	301

**Table 2. Proportion of Persons Using Heroin before or during Last Sex by Duration of IDU Exposure for Respondent and Partner Gender for NHBS-IDU2, NHBS-IDU3 and NHBS-IDU2, and NHBS-IDU3 Combined**

IDU exposure time	Proportion of those using heroin before or during last sex in IDU2				Proportion of those using heroin before or during last sex in IDU3				Proportion of those using heroin before or during last sex in IDU2 & IDU3				
	Male with	Female with	Male*	Female	Male with	Female with	Male	Female	All heroin with last sex	Male with	Female	Male**	Female with
0 to 3 years	13(43.3)	4(13.3)	14(66.7)	28(54.9)	23(71.88)	3(9.38)	14(48.28)	38(62.3)	36(58.1)	7(11.3)	28(56.0)	66(58.9)	66(58.9)
4 to 7 years	17(68.0)	4(16.0)	11(73.3)	29(72.5)	24(60)	4(10)	14(63.64)	39(62.9)	41(63.1)	8(12.3)	25(67.6)	68(66.7)	68(66.7)
8 to 11 years	24(53.3)	6(13.0)	10(50.0)	35(53.0)	16(45.71)	0(0)	10(66.67)	26(52)	40(50.0)	6(7.4)	20(57.1)	61(52.6)	61(52.6)
12 to 15 years	22(57.9)	4(10.5)	13(86.7)	35(66.0)	18(46.15)	2(5.13)	13(72.22)	31(54.39)	40(52.0)	6(7.8)	26(78.8)	66(60.0)	66(60.0)
16 to 20 years	23(52.3)	9(20.5)	8(72.7)	34(60.7)	26(46.43)	7(12.5)	10(83.33)	39(57.35)	49(49.0)	16(16.0)	18(78.3)	73(58.9)	73(58.9)
21 to 25 years	29(51.8)	12(21.4)	11(78.6)	42(60)	16(47.06)	1(2.94)	7(53.85)	23(48.94)	45(50.0)	13(14.4)	18(66.7)	65(55.6)	65(55.6)
26 to 30 years	38(73.1)	8(15.4)	9(60.0)	50(74.6)	15(55.56)	1(3.7)	7(58.33)	22(56.41)	53(67.1)	9(11.4)	16(59.3)	72(67.9)	72(67.9)
31 to 35 years	29(49.2)	5(8.5)	9(52.9)	39(51.3)	22(61.11)	2(5.56)	5(71.43)	28(65.12)	51(53.7)	7(7.4)	14(58.3)	67(56.3)	67(56.3)
36 to 39 years	36(66.7)	2(3.7)	7(53.8)	43(64.2)	17(54.84)	1(3.23)	5(83.33)	22(59.46)	53(62.4)	3(3.5)	12(60.0)	65(61.9)	65(61.9)
40+ years	33(56.9)	2(3.4)	0(0)	33(55.9)	29(55.77)	1(1.92)	4(66.67)	33(56.9)	62(56.4)	3(2.7)	4(57.1)	66(56.4)	66(56.4)
<b>Total</b>	264(57.3)	56(12.1)	92(64.8)	368(60.8)	206(53.9)	22(5.8)	89(63.5)	301(57.6)	470(55.7)	78(9.2)	181(64.0)	669(59.3)	669(59.3)

p-values \* < .05, \*\* < .025.  
Male respondents in IDU2 and IDU3 with both male and female sex partners may appear in both columns.

**Table 3. Proportion of Persons Using Pain Killers before or during Last Sex by Duration of IDU Exposure for Respondent and Partner Gender for NHBS-IDU2, NHBS-IDU3, and NHBS-IDU2, and NHBS-IDU3 combined**

IDU exposure time	Proportion of those using pain killers before or during last sex in IDU2				Proportion of those using pain killers before or during last sex in IDU3				Proportion of those using pain killers before or during last sex in IDU2 & IDU3			
	Male with	Male with	Female with	All pain killers with last sex	Male with	Male with	Female with	All pain killers with last sex*	Male with	Male with	Female with	All pain killers with last sex
0 to 3 years	0(0)	0(0)	1(5)	1(2.4)	1(3.6)	0(0)	0(0)	1(1.6)	1(2.04)	0(0)	1(2.38)	2(1.9)
4 to 7 years	0(0)	0(0)	0(0)	0(0)	1(2.8)	0(0)	1(5.6)	2(3.2)	1(1.82)	0(0)	1(3.13)	2(2.1)
8 to 11 years	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)
12 to 15 years	1(3.1)	0(0)	0(0)	1(2.2)	0(0)	0(0)	0(0)	0(0)	1(1.54)	0(0)	0(0)	1(1)
16 to 20 years	1(2.7)	0(0)	0(0)	1(2)	5(10.9)	0(0)	0(0)	5(7.4)	6(7.23)	0(0)	0(0)	6(5.1)
21 to 25 years	0(0)	0(0)	1(7.7)	1(1.7)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(4.17)	1(1)
26 to 30 years	0(0)	0(0)	1(10)	1(1.8)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(5.56)	1(1)
31 to 35 years	1(2.3)	0(0)	0(0)	1(1.9)	0(0)	0(0)	0(0)	0(0)	1(1.47)	0(0)	0(0)	1(1)
36 to 39 years	1(2.4)	0(0)	0(0)	1(2)	0(0)	0(0)	0(0)	0(0)	1(1.61)	0(0)	0(0)	1(1.1)
40+ years	0(0)	0(0)	NA	0(0)	1(2.8)	0(0)	0(0)	1(1.7)	1(1.37)	0(0)	0(0)	1(1.1)
<b>Total</b>	4(1.2)	0(0)	3(2.7)	7(1.5)	8(2.7)	0(0)	1(0.9)	9(1.7)	12(1.87)	0(0)	4(1.79)	16(1.6)

p-values \* <.05, \*\* <.025, \*\*\* <.001.  
 Male respondents with both male and female sex partners may appear in both columns.

IDU2 and IDU3, was much lower at less than three percent of all IDUs for each cycle (Table 3). In general, there are fewer females than males in our sample, which is seen in other studies (Palha & Esteves, 2002). Nevertheless, the percentages of respondents using heroin in conjunction with sex are similar between males having sex with females and females having sex with males. Only males having sex with males in IDU2 and IDU2 and IDU3 combined showed any differences that were statistically significant (Table 2). The data presented in Table 2 clearly indicate that heroin use in conjunction with sexual behavior remains high throughout the duration of IDU heroin use careers and much later than hypothesized. Contrary to the hypothesis that more of the less experienced opioid users, and less of the more experienced users, would report having sex under the influence of opiates, the results indicate that in most cases there are no significant differences in the proportion of those who use heroin in conjunction with sex across the range of IDU exposure time, and when there are significant differences over time, and the patterns fluctuate with no consistency and clearly no significant linear trend to decline over time (Table 2). Both males users having sex with females and females users having sex with males reported the same proportion of combining last sexual encounter and heroin within the past 12 months whether their exposure to heroin was short or very long. Considerably larger proportions of respondents reported heroin as an accompaniment for sexual activity than did users of prescription opioids, with less than three percent of all IDUs in IDU2 and IDU3 reporting prescription opioid use with their last sexual encounter (Table 3). We performed a simple logistic regression including only gender and time since first use of heroin. The model showed that there were neither gender differences (IDU2,  $\chi^2(1)=0.52$ ,  $p=.473$ , IDU3,  $\chi^2(1)=1.73$ ,  $p=.189$ ) nor IDU exposure time differences (IDU2,  $\chi^2(4)=5.48$ ,  $p=.241$ , IDU3,  $\chi^2(4)=5.20$ ,  $p=.267$ ) in the proportion of respondents who reported heroin use with their last sexual encounter within the past 12 months. The only significant gender by heroin exposure time interaction occurred in IDU3 ( $\chi^2(4)=11.66$ ,  $p=.020$ ), wherein male respondents showed significantly lower rates of opioid use with last sexual encounter than did female respondents between 6 and 20 years of their injection drug using career (Men vs. Women: 6-10 years of use, OR=.30, 95% CI[0.09, 0.99]; 11-20 years OR=0.39 95% CI[0.17, 0.921]). This clearly does not indicate large gender difference associations or time to exposure associations with the proportions of respondents using heroin with sex in the past 12 months. Note that due to the small numbers who

reported the use of prescription opioids with last sex in the past 12 months in IDU2 and IDU3, the logistic models were not estimated.

We also examined whether the length of time since their last sexual encounter with heroin exhibited any patterns across the different deciles of duration of injection exposure. In the two rounds of IDU surveillance in Miami reported here, most respondents who used heroin in conjunction with sex reported sexual activity relatively recently, regardless of the duration of their drug using careers (data not shown in table). The overall average of time since last sex with heroin for both NHBS-IDU2 (Mean=0.99, SD=1.15) and NHBS-IDU3 (Mean=1.27, SD=1.78) is less than one and a half months. Only one decile group in NHBS-IDU3 (i.e., those reporting duration of injection of 31 to 35 years) has an average time since last sex with heroin of greater than one and a half months (Mean=2.39, SD=3.14). This indicates that, in all except one decile group, there were no differences in the length of time since last sex with heroin in the male sex with female category, male sex with male category, female sex with male category, all heroin with last sex category, and in both rounds (i.e., the same categories shown in Table 2).

Several study limitations should be recognized. These data are from a sample of IDUs recruited by respondent-driven sampling in Miami-Dade County, Florida, and are not necessarily representative of IDUs in this county or other areas. These data are self-reported and, as such, stigmatized behaviors may have been underreported. Finally, these data are repeated cross-sectional surveys, so we did not directly observe change in sexual behavior as duration of drug use increased, but rather compared reports of individuals with differing duration of drug use at the time of the sampling, although other studies have found consistent use over time.

## DISCUSSION

Given the tenor of the background literature on this topic, which held that heroin users tended to lose interest in sex once they became regular in their heroin use, including loss of interest in sex over time (Palha & Esteves, 2008) and decreasing desire for sex with increasing age (Bang-Ping, 2009), we were surprised to find the extensive association between heroin consumption and sexual activity among survey respondents. The majority of heroin users, both male and female, and novice and experienced, reported, not only that they used heroin in conjunction with sexual activity in the past 12 months, but they continued to do so years after the start of IDU. Even long-term heroin users, using for 20 or more years, continued to consume heroin in

conjunction with sexual activity. Although some literature has shown opioid users to still be sexually active at older ages, up to 34, (Palha & Esteves, 2002), we found significant numbers of users across a longer span of drug use and here provide a more refined breakdown by length of time of exposure to opioids and a further refinement by respondent's gender and partner's gender than other literature on this topic. We also found, that mostly, there was not a large difference in the amount of time since using drugs with sex across gender and rounds, which could also be some indication that their self-reported drug effects on their sexual desires were not affecting their behavior of using drugs with sex.

In the previous literature on sexual activity and heroin use (Bang-Ping 2009; De Leon & Wexler, 1973; La Pera et al., 2003; Palha & Esteves, 2002; Palha & Esteves, 2008), the research depended heavily on retrospective narratives elicited from addicts in treatment. The principal difference between those studies and the data presented here lies in the recruitment of active drug users. Perhaps the respondents in the studies mentioned above had only experienced the full ravages of addiction. This experience is the most extreme variant of heroin use, but it is not the only form of use found among active users. Given the self-reported frequency of heroin use among the respondents in the two rounds of NHBS-IDU studied here, ranging from more than once a day to once a month or less, many respondents would fall outside of the addicted pace of heroin consumption. Their reduced frequency of use may account for the persistence of sexual activity while using heroin, even among long-term users, but we saw no strong evidence that frequency of use went down the longer the exposure (data not shown), which has been seen in other studies (Shah et al., 2006). Although the project that gathered the data presented here also collected some qualitative, open-ended interviews, these were too limited to help explain the survey findings about heroin and sex. Still, our data showing such high rates of heroin use in conjunction with sex may explain the high rates of unprotected sex reported in the literature. Further probing of these behavior patterns will be necessary to achieve a full understanding of how sexual behavior is linked to heroin use.

As stated in the methods section, we obtained an estimate of the number of years in the drug using career of each respondent by subtracting their reported age the first time they injected drugs from their age at the date of the interview. While the survey did not collect data on possible periods of cessation of drug use during this drug using career, literature suggests that the majority of injectors who cease injection subsequently resume injection within

a short period (Evans et al., 2009; Shah et al., 2006). In a long term study of cessation among injection drug users in Baltimore conducted between 1988 and 2000, three-fourths of those who ceased injecting subsequently resumed injection drug use, with half of these resuming within one year (Shah et al., 2006). Similarly, in a San Francisco study conducted between 2000 and 2008, of the 29% of young IDU who reported ceasing injection for three or more months, two-thirds relapsed to injection (Evans et al., 2009).

Despite the possibility of prescription opiates' meeting the other needs of heroin users (e.g. opioid pleasure and avoidance of withdrawal), the data show clearly that the same group of users did not associate these drugs with sex to near the extent they did with heroin. Most survey respondents did not self-report use of prescription opioids, and of those who did, half or fewer connected that use with sexual activity. Apparently, the widespread misuse of prescription pain medications in the U.S. had little effect on the connection made by respondents between heroin and sex, despite their affinity for opiates and other drugs.

### Implications for Public Health Practice

The fact that heroin has a consistent connection with sexual behavior among the respondents in the two IDU surveys presented here is of concern, because that connection facilitates a nexus between two forms of potential health risk: unprotected sex and needle/syringe use in intimate circumstances. Have long term users devised a way to cope with the difficulties that heroin introduces into their sex lives in order to stay sexually active? Could those methods be modified to include safe sex practices? We recommend that future inquiries into drug using behavior include sufficient depth of qualitative study to understand the nature of risk in these surprisingly frequent behaviors in long term users to determine the social norms that pair sex and drugs together, in both males and females.

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