ORIGINAL ARTICLE

Prevalence and Health Correlates of Prostitution Among Patients Entering Treatment for Substance Use Disorders

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Context: Studies of prostitution have focused largely on individuals involved in the commercial sex trade, with an emphasis on understanding the public health effect of this behavior. However, a broader understanding of how prostitution affects mental and physical health is needed. In particular, the study of prostitution among individuals in substance use treatment would improve efforts to provide comprehensive treatment.

Objectives: To document the prevalence of prostitution among women and men entering substance use treatment, and to test the association between prostitution, physical and mental health, and health care utilization while adjusting for reported history of childhood sexual abuse, a known correlate of prostitution and poor health outcomes.

Design, Setting, and Participants: Cross-sectional, secondary data analysis of 1606 women and 3001 men entering substance use treatment in the United States who completed a semistructured intake interview as part of a larger study.

Main Outcome Measures: Self-reported physical health (respiratory, circulatory, neurological, and internal organ conditions, bloodborne infections) and mental health (depression, anxiety, psychotic symptoms, and suicidal behavior), and use of emergency department, clinic, hospital, or inpatient mental health services within the past year.

Results: Many participants reported prostitution in their lifetime (50.8% of women and 18.5% of men) and in the past year (41.4% of women and 11.2% of men). Prostitution was associated with increased risk for bloodborne viral infections, sexually transmitted diseases, and mental health symptoms. Prostitution was associated with use of emergency care in women and use of inpatient mental health services for men.

Conclusions: Prostitution was common among a sample of individuals entering substance use treatment in the United States and was associated with higher risk of physical and mental health problems. Increased efforts toward understanding prostitution among patients in substance use treatment are warranted. Screening for prostitution in substance use treatment could allow for more comprehensive care to this population.

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PROSTITUTION, THE EXCHANGE of sex for money or drugs, has far-reaching social, psychological, and medical consequences. Prostitution is associated with a host of psychosocial vulnerabilities, including exposure to childhood physical abuse and childhood sexual abuse (CSA),[1-4] interpersonal violence in adulthood,[1,2,5,6] and substance use.[1,5,7,8] Additionally, prostitution is often linked with sociodemographic disadvantage (eg, minority ethnic status, low income, homelessness, low education level).[1,2] Because of its complexity and multifaceted nature, prostitution poses a significant challenge to clinicians and researchers alike.

Despite recognition of prostitution as a public health issue, research remains limited in generalizability and scope. Within the United States and other industrialized nations, studies have been composed largely of individuals (usually women) formally involved in the sex trade.[4-6,9] While this work provides a rich foundation, the spectrum of prostitution also includes individuals who report infrequent trading of sex for money or drugs. A broader understanding of the effect of prostitution on the mental and physical health of men and women is needed. Toward this aim, studies featuring adequately sized samples of men and women at risk for involvement in prostitution are warranted. The availability of comparison group data could also aid in determining to what extent prostitution influences health after accounting for other common risk factors.

Finally, while prostitution is not always associated with substance use disorders

(SUDs), a strong link has been demonstrated between the two.[7,8] Therefore, SUD treatment settings represent a promising area in which to extend the study of this phenomenon. An understanding of prostitution among men and women in SUD treatment would add breadth to our current understanding of prostitution and improve efforts to provide comprehensive treatment for SUDs.

Research on prostitution and health has focused on risky sexual practices (ie, unprotected sex, sex with multiple partners) and intravenous (IV) drug use.[10-12] Studies documenting a link between high-risk behaviors and rates of hepatitis A, hepatitis C, syphilis, and human immunodeficiency virus (HIV) infections among individuals involved in prostitution make an important contribution toward understanding the public health risks associated with prostitution.[9,11-13] In 1 study,[14] 20% of individuals involved in prostitution were diagnosed with HIV or a sexually transmitted disease (STD). Risk behaviors for HIV infection appear common among men and women involved in prostitution.[9,10] Some studies suggest that the transmission of HIV and bloodborne pathogens may best be explained by the exceedingly high rates of IV drug use within this community rather than exposure to high-risk sexual activity alone.[10]

We found only 1 study[5] examining the broader physical health correlates of prostitution. The investigators suggest that exposure to violence may be a key factor in the development of chronic health conditions among this population, noting a high incidence of head injuries and gynecological problems. However, this sample was composed solely of women and did not adjust for the potential effect of prior CSA. The relationship between CSA and longstanding health problems is well established,[15,16] making it imperative to adjust for CSA when examining the effect of related risk factors (eg, prostitution) on health.

Research on the mental health consequences of prostitution consists largely of studies documenting high rates of exposure to traumatic events and posttraumatic stress disorder among women involved in prostitution.[6,17,18] Most women report being raped, physically assaulted, or threatened with a weapon during the course of prostitution.[5,17] Women typically report exposure to multiple traumatic events, with as many as half meeting diagnostic criteria for posttraumatic stress disorder.[6] Clients and pimps appear to be the main source of violence; participants report patterns of domination and control analogous to violent intimate partner relationships.[19,20] Not surprisingly, women involved in prostitution report an increased incidence of depression,[4] as many as 74% report lifetime suicidal ideation,[6] and 53% have attempted suicide.[2,4] Analogous studies of men are fewer in number but suggest that they too report high rates of CSA.[21] One study suggests that rates of violence exposure during the course of prostitution may be lower among men compared with women.[22] Another study found that men involved in prostitution as juveniles reported high rates of depression, alcohol problems, and lower self-esteem in adulthood.[21]

Prostitution is associated with a complex clinical picture, likely to include social marginalization, substance use, CSA, and risk for interpersonal violence.[2,3,7,9,21,23,24] Prostitution also appears to be linked with a host of mental and physical health problems, including HIV, physical injuries, gynecological problems, depression, posttraumatic stress disorder, and increased likelihood of suicide attempts.[1,2,5,6,9,12,14,21] However, research has focused on samples identified as part of the formal sex trade and often lacks comparison groups.[5,6] The generalizability of findings to other populations, such as individuals who report prostitution less frequently or on a less-formal basis, is unknown. In addition, it is unclear to what extent comorbid mental and physical health problems are related to prostitution vs other associated risk factors.

We examined the health correlates of prostitution among a US sample of women and men entering treatment for SUDs. Our objectives were the following: (1) to document the prevalence of prostitution among women and men entering SUD treatment; (2) to test whether lifetime history of prostitution was associated with increased rates of physical and mental health problems after adjusting for age and history of CSA; and (3) to test whether lifetime prostitution was associated with increased use of health services overall and after adjusting for age and history of CSA. The relevance of our sample to the sizable population of US women and men entering treatment for SUDs and the ability to adjust for CSA represent unique contributions to the existing literature on prostitution.

METHODS

SOURCE OF DATA

We conducted secondary data analysis of the National Treatment Improvement Evaluation Study (NTIES), a multisite evaluation of SUD treatment programs funded by the Center for Substance Abuse Treatment, an agency of the Substance Abuse and Mental Health Services Administration, US Department of Health and Human Services, and conducted from July 1993 to October 1995.[25] We focused exclusively on the baseline assessment, which consisted of research interviews completed at intake to a SUD treatment program. Interviews were structured, computer-assisted survey protocols approximately 1 hour in length created for the NTIES. Questions covered mental and physical health, prostitution, substance use, victimization history, and health care utilization. Our study was conducted with approval from the Stanford University Institutional Review Board.

STUDY POPULATION

Participants were selected from 78 SUD treatment facilities distributed across the country. At smaller facilities, all of the patients were eligible to participate, whereas at larger sites, a random sample was recruited. Overall, 84.7% of eligible patients agreed to participate and provided informed consent. The NTIES sample was similar to those in other large studies of patients with SUD in gender, education, and prior treatment experiences but included a higher proportion of Hispanic and black participants.[25] Participants were also similar to those in other SUD treatment studies in their baseline substance use and psychiatric problems.[25-27]

The original NTIES sample included individuals incarcerated in prison or jail settings. However, because this study examined behaviors that may be altered by incarceration status (eg, health care utilization in the past year), incarcerated in-

dividuals were excluded. Individuals who were younger than 18 years at intake and an additional 15 participants (n=3 women, n=12 men) who declined to provide information on prostitution history were also excluded, resulting in a sample of 4607 participants (n=1606 women, n=3001 men).

MEASURES

Independent Variable

Lifetime prostitution was assessed by asking, "Have you ever had sex in exchange for money or drugs?" Participants endorsing this question were also asked, "Since [date 12 months ago] of last year, how many different times have you had sex for money or drugs: never, once, 2 to 5 times, 6 to 20 times, 21 to 100 times, or more than 100 times?" This definition and assessment of prostitution is comparable to that used in other studies that typically rely on self-report and define prostitution as the exchange of sex for money or drugs.[2,5,12,17]

Main Outcome Measures

Self-reported mental and physical health symptoms were assessed for the past year. To assess anxiety, participants reported whether they had experienced a sudden irrational fear (defined as feeling suddenly frightened or nervous in a situation in which other people would not have been afraid or nervous). To assess depression, participants reported whether they had a period of 2 weeks or more in which they felt very sad or depressed. Psychotic symptoms were assessed by asking whether participants had seen or heard things that no one else could see or hear. Participants were also asked whether they had ever attempted suicide and whether they had attempted suicide in the past year. Studies comparing medical records with self-reported symptoms suggest that the two are reasonably consistent.[28,29]

Physical health symptoms were assessed for the past year. Participants were asked whether they had experienced respiratory (serious breathing condition such as bronchitis or asthma), circulatory (serious heart or blood condition, such as high blood pressure, or anemia), internal organ (such as stomach ulcers, sugar diabetes, or kidney, female, or liver problems), and neurological (convulsions, epilepsy, migraine headaches, excluding mental health problems) conditions in the past year. They were also asked whether they had been diagnosed with any bloodborne infections (HIV or AIDS, or hepatitis or yellow jaundice).

Health care utilization was assessed via 4 indicators. Participants were asked the following: (1) whether they had been to the health clinic; (2) whether they had been to the emergency department; (3) whether they had been to the hospital; or (4) whether they had been admitted (at least overnight) for mental health treatment, which was defined as treatment of problems with emotions, nerves, or mental health, in the past year.

Other Measures

Participants reported age, education (ie, whether they had a high school diploma or GED), and whether they had stayed in a homeless shelter within the past year. Race and ethnicity were self-identified by participants among 3 options: non-Hispanic nonblack, non-Hispanic black, and Hispanic. Participants were asked to identify the substances for which they were entering treatment. The number of substances endorsed (excluding alcohol) was used as an index of polysubstance use for supplemental analyses. Participants were also asked the number of days in the past month that they drank alcohol (0, 1, 2-5, 6-10, 11-20, or >20 days) and whether they had ever used a needle to inject drugs to get high or for nonmedical purposes (IV drug use). Lastly, participants reported prior exposure to CSA, defined as having been forced (via physical force or threatening harm of the victim or someone close to the victim) to engage in sexual intercourse (vaginal, oral, or anal) prior to age 18 years. Self-reported CSA has been used in other studies, although the current definition is slightly more restrictive in that it does not include unwanted touching.[30,31]

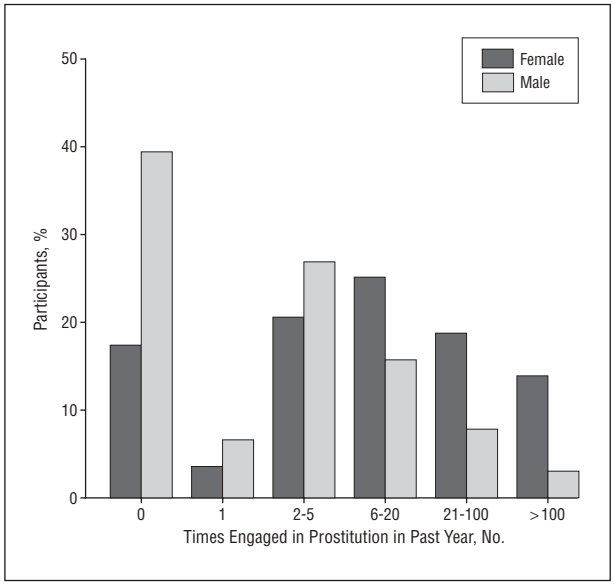

Figure. Frequency of prostitution in the prior year among the patients entering substance use disorder treatment who endorse a lifetime history of prostitution.

STATISTICAL ANALYSES

Descriptive analyses were conducted on demographic variables by prostitution status and gender. As a result of discrepancies in the prevalence of CSA, prostitution, and several other psychosocial characteristics, gender-stratified analyses were conducted; the cross-sectional design of the study did not allow for evaluation of gender as a moderator of the associations of interest.[32]

Logistic regression analyses were used to evaluate the influence of lifetime prostitution on self-reported medical and mental health problems and health care utilization. Models were run first without age and CSA, then with age and CSA entered as covariates. To account for the error rate associated with multiple comparisons, statistical significance was set at $P<.01$. Analyses were conducted in SPSS version 11.5 statistical software for Windows (SPSS, Inc, Chicago, Illinois).

RESULTS

Overall, 50.8% of women and 18.5% of men reported a lifetime history of prostitution, and 41.4% of women and 11.2% of men reported prostitution in the past year. The **Figure** displays the frequency of prostitution in the past year among those endorsing a lifetime history of prostitution. Women reported greater frequency of prostitution for the past year; 82.5% of those endorsing lifetime prostitution reported at least 1 instance in the past year and 32.9% reported more than 20 instances in the past year. For men, 60.4% of those endorsing lifetime prostitution reported at least 1 instance in the past year and 10.9% reported more than 20 instances in the past year.

Table 1. Characteristics of Women and Men Entering Substance Use Disorder Treatment by Lifetime History of Prostitution

Characteristic	Women (n=1606)			Men (n=3001)		
	Lifetime History of Prostitution[a] (n=816)	Never Involved in Prostitution[a] (n=790)	OR (99% CI)	Lifetime History of Prostitution[a] (n=557)	Never Involved in Prostitution[a] (n=2444)	OR (99% CI)
Age, mean (SD), y	31.53 (6.0)	32.70 (7.9)	0.98 (0.96-0.99)[b]	34.49 (7.4)	33.57 (8.5)	1.01 (1.00-1.03)[b]
Inpatient treatment	522 (64.0)	391 (49.5)	1.81 (1.39-2.36)[b]	280 (50.3)	1004 (41.1)	1.45 (1.14-1.85)[b]
Race/ethnicity						
Non-Hispanic black	617 (75.6)	432 (54.7)	2.57 (1.94-3.40)[b]	419 (75.2)	1254 (51.3)	2.88 (2.19-3.79)[b]
Hispanic	64 (7.8)	116 (14.7)	0.49 (0.32-0.76)[b]	42 (7.5)	408 (16.7)	0.41 (0.26-0.63)[b]
Non-Hispanic nonblack	135 (16.5)	242 (30.6)	0.45 (0.33-0.61)[b]	96 (17.2)	782 (32.0)	0.44 (0.33-0.60)[b]
No high school or GED	426 (52.2)	347 (43.9)	1.40 (1.08-1.81)[b]	216 (38.8)	906 (37.1)	1.08 (0.84-1.38)
Homelessness	246 (30.1)	82 (10.4)	3.73 (2.60-5.34)[b]	194 (34.9)	401 (16.4)	2.73 (2.09-3.57)[b]
CSA	279 (34.2)	153 (19.4)	2.16 (1.60-2.92)[b]	69 (12.4)	83 (3.4)	4.02 (2.59-6.24)[b]
Substance for which treatment is sought[c]						
Marijuana	69 (8.5)	81 (10.3)	0.81 (0.52-1.26)	77 (13.8)	394 (16.1)	0.84 (0.59-1.18)
Crack	492 (60.3)	237 (30.0)	3.54 (2.70-4.65)[b]	205 (36.8)	583 (23.9)	1.86 (1.44-2.40)[b]
Cocaine	258 (31.6)	227 (28.7)	1.15 (0.87-1.52)	251 (45.1)	788 (32.2)	1.72 (1.35-2.21)[b]
Heroin	154 (18.9)	163 (20.6)	0.90 (0.65-1.24)	135 (24.2)	534 (21.8)	1.14 (0.86-1.52)
Alcohol	318 (39.0)	328 (41.5)	0.90 (0.69-1.17)	257 (46.1)	1202 (49.2)	0.89 (0.70-1.13)
Problem substances, No.[d]			2.13 (1.67-2.71)[b]			1.71 (1.41-2.07)[b]
0	20 (2.5)	170 (21.5)		37 (6.6)	555 (22.7)	
1	604 (74.0)	468 (59.2)		362 (65.0)	1350 (55.2)	
≥ 2	192 (23.5)	152 (19.2)		158 (28.4)	539 (22.1)	
Drank in past month, d			0.96 (0.83-1.12)			1.05 (0.91-1.21)
0	411 (50.4)	354 (44.8)		219 (39.3)	1009 (41.5)	
≤ 5	168 (20.6)	229 (29.0)		149 (26.8)	630 (25.9)	
> 5	237 (29.0)	207 (26.2)		189 (33.9)	794 (32.6)	
Ever injected drugs	316 (38.7)	199 (25.2)	1.88 (1.42-2.49)[b]	263 (47.2)	861 (35.2)	1.65 (1.29-2.10)[b]

Abbreviations: CI, confidence interval; CSA, childhood sexual abuse; GED, general equivalency diploma; OR, odds ratio.
[a] Values are expressed as number (percentage) unless indicated otherwise.
[b] $P < .01$.
[c] Categories of drug of choice are not mutually exclusive, and substances endorsed by fewer than 5% of the sample are not reported.
[d] The count of problem substances excludes alcohol.

Gender-stratified comparisons (**Table 1**) revealed that women endorsing a lifetime history of prostitution were characterized by the following: (1) younger age; (2) entry into inpatient or residential treatment; (3) non-Hispanic black ethnicity; (4) lower education level; (5) homelessness; and (6) crack, polysubstance, and IV drug use. Women with a lifetime history of prostitution were also more likely to report CSA. Among men, those endorsing a lifetime history of prostitution were characterized by the following: (1) older age; (2) entry into inpatient or residential treatment; (3) non-Hispanic black ethnicity; (4) homelessness; and (5) crack and/or cocaine, polysubstance, and IV drug use. Men endorsing a lifetime history of prostitution were also more likely to report exposure to CSA.

Table 2 displays self-reported mental and physical health conditions and health care utilization patterns before and after adjusting for age and CSA. For mental health conditions, anxiety, psychotic symptoms, and lifetime history of suicide attempt were associated with prostitution in men and women before and after adjustment for age and CSA. Among men, prostitution was also associated with depression and having a suicide attempt in the past year. General physical health problems (respiratory, circulatory, and neurological) were associated with prostitution in men (but not women) in unadjusted analyses, but these differences did not remain statistically significant after adjusting for age and CSA. Among women and men, HIV or AIDS and STDs were more common in those endorsing a lifetime history of prostitution; for women, hepatitis was also associated with prostitution. While the strength of the association between prostitution and health care utilization decreased after adjustment for age and CSA, prostitution remained associated with increased emergency department use in women and increased mental health service visits in men after adjustment.

Additional analyses were conducted to better understand the findings described earlier. First, we tested whether a stronger association between health and prostitution would emerge among individuals engaging in frequent prostitution. Gender-stratified logistic regression analyses (adjusted for age and CSA) were conducted in which individuals who had engaged in prostitution more than 20 times in the past year (n=61 men, n=266 women) were compared with those without a lifetime history of prostitution. These analyses yielded the same pattern of findings shown in Table 2, with no further significant associations between prostitution and health.

Next, we examined whether adjusting for substance use (ie, days of alcohol use in the past month and number of problem substances used) might account for find-

Table 2. Association Between Lifetime History of Prostitution and Self-reported Health Conditions and Health Care Utilization in the Past Year, Before and After Adjustment for Age and Childhood Sexual Abuse

	Women (n=1606)				Men (n=3001)			
Characteristic	Lifetime History of Prostitution, No. (%) (n=816)	Never Involved in Prostitution, No. (%) (n=790)	OR (99% CI)	AOR (99% CI)[a]	Lifetime History of Prostitution, No. (%) (n=557)	Never Involved in Prostitution, No. (%) (n=2444)	OR (99% CI)	AOR (99% CI)[a]
Mental health								
Anxiety	238 (29.4)	160 (20.4)	1.63 (1.20-2.20)[b]	1.47 (1.08-2.00)[b]	157 (28.5)	498 (20.5)	1.55 (1.18-2.04)[b]	1.43 (1.08-1.90)[b]
Depression	503 (61.6)	486 (61.7)	1.00 (0.77-1.30)	0.89 (0.68-1.18)	372 (66.8)	1244 (50.9)	1.94 (1.50-2.50)[b]	1.82 (1.40-2.35)[b]
Psychotic	339 (41.5)	220 (27.8)	1.84 (1.40-2.42)[b]	1.70 (1.28-2.25)[b]	310 (5.8)	1656 (67.9)	1.68 (1.31-2.15)[b]	1.57 (1.22-2.02)[b]
Lifetime suicide attempt	338 (41.4)	229 (29.0)	1.73 (1.32-2.28)[b]	1.44 (1.08-1.92)[b]	157 (28.2)	440 (18.0)	1.79 (1.35-2.36)[a]	1.65 (1.24-2.20)[a]
Recent suicide attempt	113 (13.8)	79 (10.0)	1.45 (0.97-2.16)	1.19 (0.78-1.81)	58 (10.4)	139 (5.7)	1.93 (1.26-2.94)[b]	1.79 (1.16-2.77)[b]
Physical health								
Respiratory	175 (21.5)	168 (21.3)	1.01 (0.74-1.39)	0.98 (0.71-1.35)	77 (13.8)	246 (10.1)	1.43 (1.00-2.06)[b]	1.32 (0.91-1.91)
Circulatory	195 (23.9)	156 (19.7)	1.28 (0.94-1.75)	1.28 (0.93-1.77)	87 (15.6)	275 (11.3)	1.46 (1.04-2.06)[b]	1.43 (1.00-2.05)
Internal organ	157 (19.3)	126 (15.9)	1.26 (0.91-1.77)	1.15 (0.81-1.64)	59 (10.6)	260 (10.7)	1.00 (0.67-1.47)	0.89 (0.59-1.34)
Neurological	152 (18.7)	173 (21.9)	0.82 (0.59-1.13)	0.73 (0.52-1.01)	93 (16.7)	296 (12.1)	1.45 (1.04-2.03)[b]	1.32 (0.94-1.86)
HIV or AIDS	54 (6.6)	13 (1.6)	4.23 (1.89-9.49)[b]	3.88 (1.72-8.76)[b]	46 (8.3)	68 (2.8)	3.15 (1.89-5.23)[b]	2.80 (1.66-4.72)[b]
Hepatitis	26 (3.2)	6 (0.8)	4.31 (1.33-13.93)[b]	4.20 (1.27-13.83)[b]	19 (3.4)	49 (2.0)	1.73 (0.85-3.50)	1.54 (0.75-3.19)
STDs	97 (11.9)	16 (2.0)	6.56 (3.23-13.32)[b]	5.89 (2.88-12.05)[b]	34 (6.1)	49 (2.0)	3.18 (1.77-5.72)[b]	2.84 (1.54-5.21)[b]
Health care utilization								
Clinic visit	500 (61.3)	440 (55.7)	1.26 (0.97-1.64)	1.15 (0.88-1.50)	267 (47.9)	1031 (42.2)	1.26 (0.99-1.61)	1.22 (0.95-1.56)
ED visit	364 (44.6)	276 (34.9)	1.50 (1.15-1.95)[b]	1.32 (1.01-1.74)[b]	211 (37.9)	776 (31.8)	1.31 (1.02-1.68)[b]	1.25 (0.96-1.61)
Hospital visit	259 (31.7)	206 (26.1)	1.32 (0.99-1.75)	1.22 (0.91-1.63)	123 (22.1)	425 (17.4)	1.35 (1.00-1.81)[b]	1.27 (0.93-1.71)
Inpatient mental health service	77 (9.4)	44 (5.6)	1.77 (1.07-2.93)[b]	1.55 (0.93-2.60)	59 (10.6)	134 (5.5)	2.04 (1.34-3.12)[b]	1.81 (1.17-2.80)[b]

Abbreviations: AOR, adjusted odds ratio; CI, confidence interval; ED, emergency department; HIV, human immunodeficiency virus; OR, odds ratio; STDs, sexually transmitted diseases.

[a] Adjusted for childhood sexual abuse and age.

[b] $P < .01$.

ings presented in Table 2. Gender-stratified logistic regression analyses (adjusted for age and CSA) were conducted in which the 2 measures of substance use (number of problem substances reported and days in which alcohol was consumed in the past month) were entered as covariates; however, the pattern of the associations remained unchanged.

Finally, we examined whether the associations between prostitution and HIV or AIDS and hepatitis were accounted for by the increased prevalence of IV drug use. To investigate this, we ran models predicting the presence of bloodborne infections (eg, HIV or AIDS and hepatitis), with IV drug use entered as an additional covariate (in addition to age and CSA). After adjustment, prostitution remained associated with HIV or AIDS among women (adjusted odds ratio, 3.19; 99% confidence interval, 1.40-7.30) and men (adjusted odds ratio, 2.50; 99% confidence interval, 1.47-4.24). Prostitution was no longer associated with hepatitis in women (adjusted odds ratio, 3.23; 99% confidence interval, 0.97-10.78), and the relationship between prostitution and hepatitis remained unaltered (ie, no association) for men (adjusted odds ratio, 2.84; 99% confidence interval, 1.54-5.21).

COMMENT

In a US sample of women and men entering SUD treatment, lifetime involvement in prostitution was widespread. For many, prostitution was a frequent behavior rather than an isolated event. Consistent with prior research, prostitution was associated with demographic and psychosocial vulnerabilities including minority status, lower education level, homelessness, and self-reported CSA.[1-3,6] Furthermore, prostitution appeared to be an additional marker of risk among a sample with multiple risk factors for poor health and was associated with increased rates of mental and physical health problems (eg, suicide attempts, anxiety, STDs, and bloodborne infections) and use of some health services (eg, emergency department visits for women and mental health services for men). Our findings highlight needs to increase awareness of prostitution within SUD treatment settings and to incorporate such knowledge into treatment planning. The screening of individuals entering SUD treatment for involvement with prostitution may improve public health and allow for more comprehensive treatment. Interventions could also be informed by research aimed at understanding the needs of individuals seeking treatment for SUD who report involvement in prostitution.

AWARENESS

The rate of lifetime prostitution was high in our sample, particularly among women. This is consistent with studies suggesting that most individuals involved in prostitution have sought treatment for SUDs.[8] A compelling argument exists for increased monitoring and resources directed at understanding the effect of prostitution on the

lives of patients entering SUD treatment. Such awareness may better equip providers to address the complex mental and physical health needs of this population. Tailored treatment protocols may be needed to address the array of comorbid mental health problems, unique risks for relapse, and ongoing risk of future interpersonal violence that may be specific to prostitution.

Overall, prostitution appears to be linked to a complex clinical profile, including increased reporting of CSA, mental health symptoms, and suicide attempts. Comorbid conditions have been shown to negatively influence the effectiveness of standard SUD treatment.[33-35] Some argue that patients dually diagnosed with SUD and other mental health disorders require more comprehensive SUD treatment to address the broader aspects of functioning (ie, management of mental health symptoms, coping skills) concurrently with SUD.[27,35] Others recommend integrating the treatment of interpersonal trauma (eg, CSA, interpersonal violence) into existing SUD protocols.[34] Our findings suggest that prostitution, whether viewed as a proxy for complex mental health issues or a risk factor for exposure to interpersonal trauma, warrants consideration as part of efforts to provide comprehensive SUD treatment.

In an effort to tailor treatment to this population, clinicians may consider of the role of additional risk factors for relapse that may be associated with prostitution, such as solicitation for prostitution, exposure to violence, pressure from pimps or former clients to relapse, and management of mental and physical health symptoms related to involvement in prostitution. Emerging literature has also begun to explore interventions (peer networking, social support systems, social assistance) to assist women attempting to leave prostitution[36-38] as well as the need to bring SUD treatment services to this population.[8] These approaches have been characterized as a nonjudgmental harm-reduction model and typically include a peer-support element.[36] Ultimately, the integration of elements from the prostitution literature with the dual diagnosis and trauma literature may allow for the development of truly comprehensive interventions for this subgroup of patients with SUD.

SCREENING

Screening for prostitution in SUD treatment settings may have far-reaching implications for both society and patients. In our sample, prostitution was associated with increased rates of HIV, hepatitis, and STDs and the use of crack and/or cocaine, substances shown to be associated with other high-risk health behaviors.[9,17] These findings are consistent with prior literature documenting a high prevalence of sexual and nonsexual risk behaviors among those involved in prostitution.[9,10,22,39] Formal screening may circumvent future medical problems associated with high-risk sexual behavior and provide an opportunity to discuss other high-risk behaviors (eg, IV drug use). In fact, medical treatment, education, and follow-up for STDs and bloodborne viral infections have been shown to reduce disease transmission.[13,39,40] Screening might also allow the opportunity to provide brief interventions for those engaged in prostitution. Toward this aim, motivational interviewing,[41] a client-centered framework designed to assess ambivalence surrounding behavior change, has been adapted for use with women involved in prostitution. In a pilot study, motivational interviewing decreased substance use and prostitution as reported by participants.[42]

Additionally, information about prostitution gathered as part of a comprehensive assessment of sexual and physical victimization experiences could augment our understanding of current health behaviors. The investigators for the Adverse Childhood Experiences Study[16,43] recommend assessing multiple forms of childhood abuse exposure in health care settings, citing evidence of the longstanding effect of CSA on physical and mental health. Extending this assessment to prostitution (and exposure to prostitution-related violence, eg, sexual assault) would provide a more accurate assessment of victimization across the life span. While our study examined only the presence or absence of CSA and prostitution, information on the duration, circumstances, and extent of victimization is also likely to be relevant to understanding health.

Regarding inquiry about prostitution, some[44,45] have proposed asking patients whether they have engaged in the following: (1) exchanged sex for money, drugs, or other things of value (housing, food, clothing); (2) been employed in the sex industry (dancing, pornography, massage, escort services); or (3) had sex of any kind with a professional sex worker. Notably, these questions provide a broad assessment of prostitution that is not limited to formal involvement in the sex trade. The investigators also note that these questions should be asked at intake and again once clinicians have established rapport, as patients may initially deny these behaviors. We acknowledge the sensitive nature of these questions but argue that failure to collect this information may impede a full assessment of the treatment needs of this population. Routine, standardized screening may result in a more comprehensive and unbiased assessment of the number and diversity of patients who are affected by prostitution.

FURTHER RESEARCH

A better understanding of the scope and effect of prostitution, particularly as it relates to substance use, requires substantial efforts from the research community. Sufficiently powered studies are needed to further understand the extent to which substance use co-occurs, precedes, or follows involvement in prostitution. Within our study, we lacked temporal information regarding when prostitution began and could not assess the nature of the association between cocaine or crack use and prostitution. Evaluating the degree of risk posed by prostitution vs crack use or IV drug use remains difficult because these behaviors tend to co-occur and may influence health in parallel ways (eg, transmission of HIV, increased risk of exposure to violence).[10] In our study, adjusting for IV drug use did appear to account for the association between prostitution and hepatitis among women; however, this was not true for HIV or AIDS. Future studies aiming to delineate the independent influence of prostitution on mental and physical health should incorporate knowledge of CSA and substance use (particularly IV drug use and crack use) while considering

other factors that may negatively affect health among this population.

Overall, we found few gender differences in the health correlates of prostitution, but those differences that did emerge warrant further examination. For example, lifetime prostitution was associated with higher rates of depression among men but not women. High rates of depression reported by all of the women in our sample may suggest that depression is not specifically related to prostitution but is common to women with SUDs or high incidence of other risk factors (eg, CSA, sociodemographic vulnerabilities). However, studies should examine whether assessing the severity of depression rather than the presence or absence of depressive symptoms yields similar findings across gender.

Our findings also raise questions regarding the effect of prostitution on patterns of health care utilization. Prostitution was associated with a divergent pattern of service use across gender. More data on the rationale that women and men use when seeking specific health services (eg, cost, availability) could prove helpful in understanding this finding. Future studies may also examine the services provided and costs of treatment. Ultimately, research could contribute to empirically informed and more effective treatment of this population.

We acknowledge several limitations of our study. Foremost, the study was cross sectional and causality cannot be determined. Although we adjusted for CSA and used a sample of individuals with SUD, many mediators and moderators (ie, crack use, homelessness, and education) may best be understood with longitudinal designs. Several methodological factors also limit the generalizability of our findings. Our sample represents individuals entering SUD programs and findings cannot be extended to individuals without SUD or to those with SUD who do not present for treatment. Further, although our study had a response rate of 84.7%,[25] the use of archival data prohibits comparisons between those who responded and those who refused participation. Additionally, data collection for this study took place in 1993, and while there is no reason to believe that the fundamental relationships discussed between prostitution, mental health, and physical health have changed with the passage of time, some aspects of patient behavior (eg, drug of choice) may have changed.

Finally, the NTIES design prioritized breadth of information over contextual depth. While the NTIES approach to identification of prostitution is consistent with other studies in the literature,[1,2,6] more information about the context of prostitution (eg, age at onset, temporal relationship to substance use, client population) would be of great utility. Likewise, limited contextual information was available regarding CSA exposure (eg, perpetrator, age at abuse, chronicity), and we were unable to tailor the assessment of health to problems or symptoms that may be specific to prostitution, such as conditions related to interpersonal violence (eg, head injury, fractures) or gynecological problems.[5] The NTIES survey assessed only broad mental health symptoms; more detailed and extensive assessment of the breadth (ie, cognitive vs physical symptoms, sadness vs agitation) and severity of anxiety and depression is needed. Overall, the use of dichotomous variables allowed for only an estimation of relationships between health and prostitution in a large sample, but these findings should contribute to the design of more detailed studies.

Despite its limitations, our study builds significantly on prior literature. The use of a national sample of patients from the United States, selected not for prostitution but for SUD, expands awareness of this issue into a new context. Comparison of the NTIES sample to other large-scale SUD treatment studies within the United States suggests ecological validity, supporting the extension of our findings to other US samples presenting for SUD treatment.[26,27] Our sample was also large enough to allow us to adjust for the effect of CSA on health, analyses that were absent in the existing literature. Finally, we were also able to examine prostitution not only in women but also in men, an often neglected cohort.

Our study documents high rates of lifetime involvement in prostitution among women and men entering treatment for SUD in the United States. Even after adjusting for the effect of CSA, prostitution was associated with a complicated medical and mental health picture as well as the use of specific health services. These findings suggest a need for increased awareness and consideration of prostitution within SUD treatment settings in the United States. Formal screening may aid in better understanding the scope of this problem as well as in providing individualized care to a vulnerable population. Our findings serve as a foundation from which to build an understanding of the linkages between prostitution, substance use, and health.

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