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Sex Trade and Health Care Utilization among People Living with HIV/AIDS

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Abstract

People living with HIV/AIDS (PLWH) are more likely to have a history of trading sex, but little research has examined whether trading sex is associated with lower health care utilization amongst PLWH. This study assesses this association with PLWH (N=583) recruited and surveyed from seven community sites in six US cities participating in a multi-site community-based HIV test and treat initiative. Participants were 90.6% Black or Latino, 30.4% homeless, and 9.0% (1 in 11) sold sex (past 90 days). Most reported receiving HIV clinical care (63.9%, past 6 months) and HIV case management (68.9%, past year), but 35.7% reported a missed health care appointment (past 3 months). In adjusted regression models, trading sex was associated with a missed health care appointment (OR=2.44) and receiving psychological assistance (OR=2.31), past 90 days, but not receipt of HIV care or supportive HIV services. Trading sex may compromise consistent health care utilization among PLWH.

RESUMEN

Las personas que viven con VIH/SIDA (SLWH) tienen más probabilidades de tener un historial de comercio sexual, poca investigación ha examinado si el comercio sexual está asociado con una menor utilización de atención médica entre las personas PLHW. Este estudio evalúa la asociación con PLWH (N=583) reclutados y encuestados en seis ciudades en los Estados Unidos. Los participantes fueron 90.6% Negros o Latinos, 30.4% sin hogar y 9.0% (1 en 11) vendió sexo (últimos 90 días). La mayoría informó que recibió atención médica (63.9%, últimos 6 meses) y manejo de caso VIH (68.9%, el pasado año), pero 35.7% perdió una cita médica (últimos 3

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Compliance with Ethical Standards

Conflict of interest: The authors declare that they have no conflict of interest.

Ethical Approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Sites obtained site-specific institutional review board approval, and the Institutional Review Board of the University of California San Diego provided approval for the overall cross-site evaluation study protocol (ref: 130077/2013).

Informed Consent: Informed consent was obtained from all individual participants included in the study.

meses). En los modelos de regresión ajustada, el sexo comercial fue asociado con una cita médica perdida (OR=2.31), después de 90 días, pero sin atención o servicios de apoyo VIH. El comercio sexual puede comprometer el uso constante de atención médica en las PLWH.

INTRODUCTION

Globally, sex trade is seen as a key driver of HIV, and mathematical models indicate that elimination of gender-based violence combined with improved access to anti-retroviral therapy (ART) among those who trade sex would substantially and significantly reduce HIV rates nationally by country [1–2]. These analyses are based largely on data from sub-Saharan Africa and Canada, excluding the United States (US) due to the limited domestic data available on sex trade and HIV. Within the US, evidence documents the preponderance of sex trade- i.e., sex in exchange for money, drugs, or survival needs such as a place to stay- across a diversity of populations including STI clinic patients, women receiving family planning services, substance using populations, transgender women, and men who have sex with men [3–5]. These studies, as well as national data [6], document increased risk for HIV and related risk behaviors among those who trade sex, in particular when sex is traded for drugs [7]. Unfortunately, despite the extensive evidence on the intersection of sex trade and HIV, there remains a paucity of data on sex trade among people living with HIV (PLWH) and its associations with other health risks, post-diagnosis.

Regular HIV care utilization, combined with receipt of and adherence to ART can support the health and viral suppression of PLWH, and simultaneously reduce their risk for transmission of the virus to others [8]. Unfortunately, of the 1.2 million PLWH in the US, only 40% regularly utilize HIV care, though those that are engaged in care are more likely to be on ART and have achieved viral suppression. Barriers to HIV care utilization have been well documented in the scientific literature [9–12] and include substance use, social deprivation (poverty, food insecurity, homelessness), stigma related to HIV disclosure, lack of social support, fear of side effects, and the accessibility and quality of health services [9]. Many of these same factors, particularly substance use and social deprivation, are associated with sex trade involvement [13,14], but studies assessing the association between sex trade and HIV care utilization are largely lacking in the US [15].

Additionally, few studies have assessed whether sex trade affects the utilization of non-HIV services, i.e., substance use and mental health treatment, amongst PLWH. Research has documented that those involved with sex trade are less likely to seek health care, or to disclose their sex trade involvement in the context of care, due to sex trade-related stigma [16,17]. For example, outside of the US, studies show that among male and female persons engaged in sex trade, those who perceive greater sex trade-related stigma are more likely to delay or to avoid non-HIV specific services, as well as HIV counseling and testing services [18,19]. However, less is known about the association between sex trade and health care utilization among PLWH in the US.

This study examines the association between sex trade involvement, specifically selling sex (for money, drugs or a place to stay) and the receipt of HIV and non-HIV specific health care services among PLWH in the US. We hypothesize that sex trade involvement (selling

sex) is associated with less utilization of HIV care, HIV case management, and other social and health services (substance use treatment, mental health services, general healthcare visits) among PLWH. Understanding the prevalence of sex trade involvement and its potential health impact among PLWH is important to guide broader health considerations for PLWH in the US, given the heightened physical and mental health issues faced by those in the sex trade, particularly by substance-using PLWH. Findings may also offer a more nuanced way of understanding who is actively involved in sex trade among PLWH in the US and the extent to which such involvement may affect their health care utilization.

METHODS

Data collection/recruitment

Persons living with HIV (N=583) were recruited for the current study and surveyed at baseline from October 2013 - August 2016 as part of a multi-site community-based HIV test and treat initiative. Participants were included in this study if they tested HIV positive as part of the study, or if they were already living with HIV but inconsistently utilized HIV care during the past year, or if they were already living with HIV but never utilized HIV care within the past six or 12 months. Research staff from seven community-based agency sites across six US cities recruited participants from populations disproportionately affected by HIV/AIDS: African American/Black and Latino MSM, transgender women, women of color, recently incarcerated persons, and persons who inject drugs. The regions included major metropolitan cities on the east and west coasts, a mid-Atlantic suburb, and rural southeastern areas.

Sites recruited participants via outreach, advertisements, or snowball sampling in various settings, and some sites recruited from within health care settings, substance use treatment, prison release programs, and HIV testing sites (e.g., bathhouses), while others additionally engaged in more focused street outreach to locate their target population. Trained staff obtained informed consent from participants and administered in-person baseline surveys. Survey data were gathered using mobile tablets, and when preferred, paper surveys. In the larger study's evaluation design, participants were enrolled into an intervention or control condition and received three- and six- month follow-up surveys, in addition to their baseline survey. Current analyses were restricted to baseline data from this study.

Measures

Independent Variable: *Sex trade* was defined as having 'sex in exchange for money, drugs, food, or other goods' in the past 90 days (Yes, No). While sex trade can include buying or selling sex, we focus on the selling sex aspect of the sex trade in this paper and we use the term sex trade interchangeably with selling sex. An item also assessed whether they gave someone money, drugs, or a place to stay in exchange for sex (buying sex) and those data are presented descriptively in this paper as a separate item.

Outcome Variables: HIV and non-HIV service utilization was defined by self-reported use (Yes, No) of the following services: *HIV care utilization* (having a medical appointment in which they received their CD4 count) in the past six-months, *HIV support services* (seeing

any professional for the primary purpose of getting help for an HIV issue or HIV case management need [e.g., related to shelter, food, coordination of services]) in the past 12-months, *Psychological treatment* (seeing any medical or mental health professional for the primary purpose of getting help for a psychological or emotional issue) in the past 12-months, *Alcohol or drug treatment* (seeing any professional for the primary purpose of substance use treatment) in the past 12 months was also measured, and *Missed health care appointments* (missed any scheduled appointment for any health services) in the past 3-months.

Covariates: *Sociodemographic* items included *age*, *race*, *gender*, *sexual orientation* (bisexual, lesbian/gay/queer, heterosexual), and *gender identity* (cisgender men, cisgender women, transgender women [male-to-female]). Because transgender individuals may self-identify as male or female, rather than transgender in the survey, a validity assessment using agency gender identity records was conducted. Participants not identified as having a lived transgender experience by either method were coded as cisgender man or cisgender woman, meaning they identified with the gender corresponding to their biological sex assignment at birth. Given extensive data on the intersection of violence and sex trade involvement [20–23], as well as substance use and violence among those trading sex [24–34], we also included the following variables in our analyses:

Sexual Violence was defined as, ‘having been forced or pressured for sex,’ or having someone ‘physically hurting the sexual parts of your body, including touching that made you feel uncomfortable.’ Participants indicated if they had ever (Yes, No) experienced sexual violence within the past year. *Physical violence* was measured by whether they were ever physically abused (slapped, beaten, kicked, choked, or threatened with a weapon) by someone in the past 90-days (Yes, No).

Drug and alcohol use were assessed using the TCU-DS2 and an adapted version of the AUDIT-10 (items 1–3, 9–10) [35], respectively [36]. Illicit drug use (Yes, No) in the past 30-days included any self-reported illicit drug use (excluding marijuana). Participants reported alcohol-related risk (Yes, No) if they had engaged in binge drinking (≥ 5 drinks in one setting). Alcohol-related risk was adapted from AUDIT (item 3) in the past 30 days or experienced alcohol-related harms (i.e., one’s drinking resulting in injury to self or others; AUDIT items 9–10) in the past 12 months.

Other covariates were: *History of incarceration* (Yes, but not in the past 12 months; or Never), *being medically insured* (Yes, No), and *running out of cash in the past year* (daily, weekly, monthly, occasionally, never). *Homelessness* was coded as “Yes” if they reported being homeless or on the streets for one day or more in the past 90, and “No” if they recorded zero days for both. *Time since first HIV diagnosis* was dichotomized as “less than one year,” and “over one year” to differentiate between those who were newly diagnosed and not.

Data analysis

Descriptive statistics and bivariate regression models were run to characterize socio-demographics of the population and the associations between selling sex and the outcomes

of interest. Multivariable mixed-effects logistic regression models (GLMM) with a random effect for study site were used to test for associations of sex trade involvement and HIV or non-HIV service utilization outcomes. Models adjusted for age, race, gender, history of incarceration and substance use, being insured, homelessness, running out of cash, time since first HIV diagnosis, and individuals nested within study sites. Even when not statistically significant at the bivariate level, these variables were kept in the final model based on empirically demonstrated, prior documented research that demonstrated associations with either HIV health care adherence or sex trade involvement (32, 37–41). We needed to consider a range of experiences (e.g. for those recently diagnosed, sex trade could have preceded their HIV diagnosis).

Hosmer-Lemeshow goodness of fit tests were run and checked for collinearity. All tests were two-tailed, statistical significance was evaluated at $\alpha=.05$, and analyses were conducted using Stata, Version 14 SE (Stata Corp, College Station, TX).

RESULTS

Participants (N=583, median age 45 years, range: 18–78) were majority heterosexual (55.4%), gay/lesbian (29.0%), and bisexual (15.6%), although n=14 (2.4%) did not specify their sexual orientation. (See Table I). Over half were cisgender men (55.1%); 34.1% were cisgender women, and 10.8% identified as transgender women. Most participants were Black/African American (75.5%), and an additional 15.1% were Latino. More than a quarter reported being incarcerated over the past year (29.0%) and 40% were previously incarcerated. Nearly 1 in 5 (19.0%) used illicit drugs in the past 30 days and 16.3% were heavy drinkers in the past 30 days. The majority (82.3%) said they ran out of money over the past year, and 30.4% were homeless; 17% reported having no health insurance. Nine percent had traded (sold) sex and 3.5% had bought sex in the past 90 days. When adjusting for time since diagnosis, there were no significant differences in the proportion that sold sex (7.8% of those diagnosed <1 year vs. 9.2% of those diagnosed 1+ years) (nor 12.2% of those diagnosed 1–4 years vs. 8.7% of those diagnosed 5+ years).

Regarding our primary outcomes, given the inclusion criteria (newly diagnosed, or inconsistent or non-utilizers of HIV services), over one-third of participants (35.9%) did not utilize HIV care in the past six months, though over two-thirds of participants (68.9%) utilized HIV support services in the past 12 months. Use of non-HIV services relatively was common, with one-third (34.7%) of participants utilizing mental health services in the past 12 months, and 18.7% utilizing substance abuse treatment in this same timeframe. Conversely, 35.7% of participants missed a healthcare appointment of any type in the past three months.

In bivariate analyses, no significant associations at the $p<.05$ level with trading sex were observed for utilizing HIV care or HIV support services, or for missing scheduled health care appointments. However, those who recently traded sex were significantly more likely to have utilized psychological help ($p=.009$) and substance abuse treatment ($p=.009$) in the past year, and a marginal association with missed health care appointments was observed ($p=.068$). Recent engagement in sex trade was significantly associated with transgender identity

($p<.001$), illicit drug use in the past 30 days ($p<.001$), recent incarceration ($p=.031$), and homelessness ($p<.001$).

For the final multivariable regression models (Table II), 558 participants were included; 25 observations were dropped due to missing data on sexual orientation (14 missing), sexual abuse (seven missing), selling sex (five missing), age (one missing), and homelessness (one missing). Participants reporting selling sex in the past 90 days were significantly more likely to report receipt of psychological assistance in the past 90 days ($p=.019$; OR=2.31, CI: 1.15, 4.67), opposite of what was hypothesized, and missing a health care appointment in the past 3 months ($p=.007$; OR=2.90, CI: 1.34, 6.28). No other significant associations between selling sex and our outcomes of interest were observed.

In terms of covariates significantly associated with our HIV care outcomes of interest, participants reporting health insurance had higher odds of utilizing HIV medical care in the past 6 months ($p<.001$; OR=2.76, CI: 1.64, 4.66), whereas cisgender women compared to cisgender men had lower odds of having an HIV care appointment ($p=.020$; OR=0.50, CI: 0.28, 0.90). Participants reporting health insurance ($p=.009$; OR=1.95, CI: 1.18, 3.22), past year physical and/or sexual abuse ($p=.045$; OR=2.98, CI: 1.03, 8.66), incarceration in the past 12 months ($p=.038$; OR=1.77, CI: 1.03, 3.03), and transgender women (compared to cisgender men) ($p=.004$; OR= 4.18, CI: 1.58, 11.06) reported higher odds of receiving HIV support services (e.g. case management).

In terms of covariates associated with utilizing psychological or substance use treatment, participants who ran out of money during the past year had higher odds of receiving psychological care ($p=.042$; OR=1.74, CI: 1.02, 2.96), where participants diagnosed with HIV less than a year ago were less likely to have received psychological care ($p=.002$; OR=0.32, CI: 0.15, 0.65). Participants reporting illicit drug use in the past 30 days were more likely to report utilization of substance use treatment ($p=.036$; OR=2.06, CI: 1.05, 4.02) than those who did not use illicit drugs in the past 30 days, as were participants reporting a history of incarceration ($p=.001$; OR=4.30, CI: 1.82, 10.17 for those incarcerated in the past 12 months; and $p=.005$; OR= 2.94, CI: 1.39, 6.24 for those incarcerated previously), relative to those with no incarceration history.

In terms of covariates associated with a missed health care appointment of any kind in the past three months, participants reporting physical and/or sexual abuse in the past year ($p=.041$; OR=2.35, CI: 1.03, 5.34), those incarcerated prior to the past 12 months relative to no incarceration history ($p=.035$; OR=1.74, CI: 1.04, 2.92), and those having ran out of money in the past year ($p=.031$; OR=1.86, CI:1.06, 3.25) had increased odds of missing a clinical appointment. Participants reporting recent (less than a year) HIV diagnosis had lower odds of having missed a clinical appointment ($p=.013$; OR=0.43, CI: 0.22, 0.84).

Missing a health care appointment of any kind and having an HIV care appointment in the last six months were not necessarily mutually exclusive categories because healthcare appointment could also be an HIV appointment. Overall, 64.2% had an HIV care appointment in the past 6 months, and 35.8% did not. Of those with an HIV care appointment in the past 6 months, 62.3% said they never missed a healthcare appointment in

the past 3 months. However, 37.7% of those with a HIV care appointment in the past 6 months reported missing a healthcare appointment in the past 3 months. Of those who did not have an HIV care appointment in the past 6 months (35.8%), 32.1% said they missed a healthcare appointment in the last 3 months (therefore a non-HIV medical care appointment), and 67.9% said they did not miss their healthcare appointments. Therefore, whether or not they had an HIV care appointment, 32–38% missed a healthcare appointment, and 35.8% had no HIV care appointment in the past 6 months.

The adjusted models also show that participants who had been diagnosed <1 year were significantly less likely than those who had been diagnosed more than a year to receive HIV case management ($p=.006$; $OR=0.44$, $CI: 0.25, 0.79$) and to receive psychological help ($p=.002$; $OR=0.32$, $CI: 0.15, 0.65$).

DISCUSSION

Among persons living with HIV across six cities in this US study, one in eleven people was found to have traded sex in the past 90 days. The overlap between sex trade and homelessness reinforces indications that many PLWH are suffering from economic deprivation and may be turning to sex trade for survival. Findings further demonstrate that social marginalization- transgender identity, recent incarceration, and illicit drug use- is linked with sex trade involvement among PLWH, and that engaging in the sex trade can increase the likelihood of missing health care appointments. Sex trade involvement, especially when living with HIV, remains greatly stigmatized [42, 43]. Those trading sex were also more likely to use illicit drugs, but were not more likely to utilize substance use treatment, suggesting a greater need to address drug use in this population. Globally, such associations of sex trade and substance use have been seen among PLWH [3,4], but until now, this has not been well documented among persons living with HIV in the US. The results of this paper provide insights into the potential effects sex trade may have on engagement in HIV care and non-HIV related health services, particularly among racial and sexual minority PLWH in the US [44,45].

Importantly, utilization of HIV care was less likely to occur for cisgender women compared to cisgender men, a finding consistent in the literature [46–48]. Women living with HIV experience greater barriers to care, largely due to fears of disclosing their HIV status [49], as well as experiencing structural barriers [50], depression, and trauma [51, 52]. More research is needed on strategies to get women into care in the US [53, 54] and on antiretroviral medication.

Additionally, we sought to understand whether sex trade involvement and other factors presented a barrier to health care appointments. Although no associations existed between trading sex and recent HIV care utilization in this study, trading sex was associated with missing health care appointments in general. Those who were physically and/or sexually abused in the past year, who had an incarceration history, and who reported running out of money were also more likely to miss health care appointments. These findings may be a result of barriers to care resulting from vulnerable conditions faced by PLWH and have implications for quality of life issues for those having difficulty following up on their health

care appointments [3–5]. In addition, missed medical visits among PLWH have been identified as a factor associated with poorer virologic suppression and increased risk for mortality [55, 56]. While we did not observe sex trade involvement affecting recent use of HIV care, the observed association with missed health care appointments raises further questions about the potential long-term health impacts of economic deprivation, sex trade, and HIV treatment success.

Notably, participants with health insurance were three times more likely to have an HIV care visit in the past six months and nearly two times more likely to have accessed HIV support services. Few studies have documented the effect health insurance has on the utilization of health care in the US for PLWH, but some have documented problems with the quality or lack of health insurance for PLWH in other parts of the world [57, 58]. In other studies, having health insurance has been shown to increase the likelihood of people returning for their HIV test results [59]. Also, having no access to Medicaid prior to the US Patient Protection and Affordable Care Act (PPACA) [60] left many PLWH without health care coverage. These findings reinforce the need for health insurance coverage for PLWH in terms of affecting quality of life [61] as well as the need for non-stigmatizing, quality health insurance [62]. Without the PPACA, many more would likely have been without insurance in this study, not including those excluded from PPACA because of their undocumented or immigration status (documented but within 5 years of entering the country). With 20 million previously uninsured Americans now covered under PPACA [63], and PPACA as a significant source of coverage for PLWH [64], a dismantling of the PPACA would result in sharp decreases in the insured, especially among people of color, women, and those with pre-existing conditions [63].

Surprisingly, those who sold sex also had greater odds of receiving recent psychological treatment, which was in the opposite direction of the hypothesis. Perhaps the finding may be explained by the fact PLWH who trade sex often face greater trauma or mental health diagnoses than those who don't trade sex [65–67]. Studies show a high prevalence of mental health disorders among harder-to-reach persons living with HIV, and that poorer mental health was associated with sexual violence and stigma experiences [68], experiences also heightened by involvement in the sex trade. Additionally, those who ran out of money during the past year in the current study were less likely to utilize psychological services, indicating that destabilization may be more influential than stigma in the population as explained by the participants' increased likelihood of missed healthcare appointments.

The findings of this study highlight the prevalence of trading sex in the context of illicit drug use and the need to improve their access to substance use services. Substance use was higher for those selling sex, confirming other research on PLWH who have traded sex for money and drugs [69]. In the current study, those accessing substance use services were more likely to occur for participants with any incarceration history and for those who reported engaging in illicit drug use in the past 30 days, rather than for those who sold sex. These findings highlight the need for more attention to those who trade sex and use drugs. In the absence of treatment, research has shown that alcohol and substance use has a negative effect on ART adherence and subsequent viral suppression, emphasizing likely consequences of not utilizing substance use treatment among PLWH engaged in sex trade [70].

Transgender women (compared to cisgender men), and participants who were incarcerated in the past 12 months (compared to those with no incarceration history), and those who were abused, were more likely to access HIV support services. Transgender women in this study experienced high levels of violence, as found in the literature [71], and both being a transgender individual and/or experiencing violence have typically posed barriers to care. An explanation for this study's contradictory findings is that transgender women in San Francisco [72] and those recently released from incarceration in New York City [73] in our study may have better access to case management because of the specialized services and policies for transgender persons and prisoners in those cities. The US Patient Protection and Affordable Care Act of 2010 [57], and coverage of hormone treatments for transgender persons in certain geographic areas, may have also increased these populations' utilization of HIV support services. Likewise, those who have been abused or incarcerated in the past year may have been more likely to access HIV support services in the current study due to their higher likelihood of coming into contact with HIV case management services, either in jail or after a police report. Nevertheless, these results emphasize the need to further study the impact that specific state and local provisions of care have on transgender, incarcerated, and abused populations.

Also, time since diagnosis appeared to make a difference in this study. Participants who had been diagnosed with HIV for less than a year were less likely to miss healthcare appointments in general, but they were also less likely to receive HIV support services and psychological help. However, more than one in five of those first HIV diagnosed for a year or less did not have an HIV care appointment in the past 12 months, which is worth noting because the first year is usually a critical time to have an appointment. These results have implications for who are linked and retained in HIV treatment, and for patterns of health seeking behavior among the newly diagnosed. Studies show higher antiretroviral (ARV) drug resistance in newly diagnosed individuals among African American MSM and transgender individuals compared to other populations [74]. Likewise, our findings could be from participant denial, stigma, or lack of awareness about HIV services, or merely a result of newly diagnosed individuals having less time to access services, which needs further exploration [75].

Unfortunately, those who tested positive for HIV for the first time was not systematically collected at the study sites. However, generally speaking, sites reported very low cases of HIV identified through their testing efforts (0–3 per year). Therefore, it is not possible to check whether those who just tested positive for the first time were included among those not engaged in treatment for the past 6 months. However, by the very low rates of new diagnoses at the study sites, we can assume most were not very newly diagnosed.

Other limitations of this study include the cross-sectional nature of the baseline data, and generalizability may be limited to contexts of the sites in this US study. Timeframes also varied across variables, as did the community-based sites and populations of interest. However, variations across sites were controlled for with a nested design and included population differences as covariates when possible. Missing general healthcare appointments as a finding should be interpreted with caution because those who had access to medical insurance were more likely to report having missed healthcare appointments than those who

were without any appointments due to being uninsured. Furthermore, missing health care appointments does not necessarily translate into not receiving HIV or non-HIV-related services. Also, the study occurred during the roll out of PPACA, with some sites located in states that accepted Medicaid expansion dollars. Therefore, it was difficult to determine whether or not participants had access to health insurance at the time they were surveyed.

CONCLUSIONS

One in eleven PLWH in our study reported selling sex in the past 90 days, and selling sex was associated with social deprivation (homelessness) and social marginalization (transgender identity, recent incarceration, and recent illicit drug use), suggesting that these individuals are turning to sex as a means of survival. Further, trading sex was associated with missed medical appointments, possibly due to less stability and greater stigma, again related to social deprivation and marginalization. More social and economic supports for PLWH may help reduce reliance on sex trade, and increase consistency in health care use, particularly for socially marginalized groups such as transgender women, those exiting prison, and those actively using drugs. Additional findings in this study highlight the lack of health insurance and money as key drivers of non-utilization of services. Again, these findings highlight the importance of economic supports and health care for PLWH. Overall, these findings highlight that while access to medical care is important, housing stability and economic opportunity combined with health care coverage are key to ensuring the health and safety of PLWH in the US.

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Table I.

Socio-demographic and behavioral characteristics associated with trading sex among participants across seven US community-based sites, n=583

	Total Sample n= 583	Sold sex, past 90 days, ** No. (%)		p-value
	Yes (n=52, 9.00)	No (n=526, 91.00)		
Age ** (median, range)	45 (18–78)	43 (18–57)	46 (18–78)	0.096
Race				0.909
Black/African American	440 (75.47)	41 (78.85)	394 (74.90)	
Latino	88 (15.09)	8 (15.38)	80 (15.21)	
White	28 (4.80)	2 (3.85)	26 (4.94)	
Other	27 (4.63)	1 (1.92)	26 (4.94)	
Gender				<0.001 *
Cisgender man	321 (55.06)	13 (25.00)	305 (57.98)	
Cisgender woman	199 (34.13)	16 (30.77)	182 (34.60)	
Transgender woman	63 (10.81)	23 (44.23)	39 (7.41)	
Sexual orientation **				0.605
Heterosexual	315 (55.36)	27 (54.00)	285 (55.45)	
Gay/Lesbian	165 (29.00)	13 (26.00)	151 (29.38)	
Bisexual	89 (15.64)	10 (20.00)	78 (15.18)	
Incarceration				0.031 *
In past 12 months	169 (28.99)	14 (26.92)	152 (28.90)	
Yes, but not in past 12 months	233 (39.97)	29 (55.77)	203 (38.59)	
Never	181 (31.05)	9 (17.31)	171 (32.51)	
Health Insurance ***				>0.999
Yes	484 (83.02)	43 (82.69)	436 (82.89)	
No	99 (16.98)	9 (17.31)	90 (17.11)	
Illicit drug use, past 30 days, excluding marijuana				<0.001 *
Yes	111 (19.04)	23 (44.23)	88 (16.73)	
No	472 (80.96)	29 (55.77)	438 (83.27)	
Heavy drinking, past 30 days				0.558
Yes	95 (16.30)	10 (19.23)	85 (16.16)	
No	488 (83.70)	42 (80.77)	441 (83.84)	
Ran out of money, past 12 months				0.127
Daily	104 (17.84)	16 (30.77)	87 (16.54)	
Weekly	109 (18.70)	8 (15.38)	101 (19.20)	

	Total Sample n= 583	Sold sex, past 90 days, ** No. (%)		p-value
	Yes (n=52, 9.00)	No (n=526, 91.00)		
Monthly	130 (22.30)	11 (21.15)	118 (22.43)	
Occasionally	137 (23.50)	12 (23.08)	124 (23.57)	
Never	103 (17.67)	5 (9.62)	96 (18.25)	
Homelessness, past 90 days				<0.001 *
Yes	177 (30.36)	28 (53.85)	146 (27.81)	
No	405 (69.47)	24 (46.15)	379 (72.19)	
Abused, physically (past 90 days) and/or sexually (past year) **				0.187
Yes	32 (5.56)	5 (10.00)	27 (5.18)	
No	544 (94.44)	45 (90.00)	494 (94.82)	
Time since first HIV diagnosis				0.692
1 year or less	77 (13.58)	6 (10.58)	71 (12.52)	
Less than a year	490 (86.42)	445 (89.42)	45 (87.48)	
HIV clinical care, past 6 months (CD4 count)				>0.999
Yes	374 (64.15)	33 (63.46)	337 (64.07)	
No	209 (35.85)	19 (36.54)	189 (35.93)	
HIV services (e.g. case management), past 12 months				>0.999
Yes	402 (68.95)	36 (69.23)	364 (69.20)	
No	181 (31.05)	16 (30.77)	162 (30.80)	
Received psychological treatment, past 12 months				0.009 *
Yes	202 (34.65)	27 (51.92)	173 (32.89)	
No	381 (65.35)	25 (48.08)	353 (67.11)	
Alcohol or drug treatment, past 12 months				0.009 *
Yes	109 (18.70)	17 (32.69)	90 (17.11)	
No	474 (81.30)	35 (67.31)	436 (82.89)	
Missed any healthcare appointments, past 3 months				0.068
Yes	208 (35.68)	25 (48.08)	182 (34.60)	
No	375 (64.32)	27 (51.92)	344 (65.40)	

* Significant at p-value<0.05

** Missing: sold sex (n=5); age (n=1); non-identified sexual orientation (n=14); physical/sexual abuse (n=7)

*** Study recruitment occurred during the implementation of the Affordable Care Act.

Table II.

Socio-demographic and behavioral characteristics associated with selling sex among participants across seven US community-based sites, n=558, adjusting for socio-demographic characteristics *

	HIV care utilization, past 6 months	HIV case management, past 12 months	Received psychological help, past 12 months	Alcohol or drug treatment, past 12 months	Missed any healthcare appointments, past 3 months
	(Odds Ratio, 95% Confidence Interval)	(OR, 95% CI)	(OR, 95% CI)	(OR, 95% CI)	(OR, 95% CI)
Sold sex, past 90 days					
Yes	1.10 (0.52, 2.34)	0.62 (0.28, 1.37)	2.31 (1.15, 4.67) **	1.78 (0.79, 4.03)	2.90 (1.34, 6.28) **
No	Ref.	Ref.	Ref.	Ref.	Ref.
Abused physically (past 90 days) and/or sexually (past year)					
Yes	2.05 (0.84, 5.02)	2.98 (1.03, 8.66) **	1.63 (0.74, 3.59)	1.45 (0.52, 3.99)	2.35 (1.03, 5.34) **
No	Ref.	Ref.	Ref.	Ref.	Ref.
Age	1.01 (0.99, 1.03)	1.00 (0.98, 1.02)	0.99 (0.98, 1.01)	1.00 (0.98, 1.02)	0.98 (0.96, 1.00) **
Race					
Black/African American	1.26 (0.51, 3.12)	1.64 (0.70, 3.85)	1.36 (0.53, 3.46)	1.04 (0.34, 3.21)	0.42 (0.17, 1.05)
Latino	2.42 (0.85, 6.88)	1.23 (0.48, 3.19)	2.17 (0.77, 6.16)	1.02 (0.28, 3.69)	0.52 (0.19, 1.44)
Other	2.79 (0.72, 10.86)	1.56 (0.44, 5.46)	1.93 (0.56, 6.67)	1.86 (0.40, 8.69)	0.48 (0.13, 1.71)
White	Ref.	Ref.	Ref.	Ref.	Ref.
Gender					
Cisgender woman	0.50 (0.28, 0.90)	1.48 (0.94, 2.33)	0.93 (0.57, 1.52)	1.63 (0.85, 3.11)	0.91 (0.49, 1.69)
Transgender woman	1.34 (0.41, 4.39)	4.18 (1.58, 11.06) **	0.95 (0.43, 2.11)	0.65 (0.20, 2.12)	0.61 (0.17, 2.16)
Cisgender man	Ref.	Ref.	Ref.	Ref.	Ref.
Incarceration					
In past 12 months	1.25 (0.66, 2.38)	1.77 (1.03, 3.03) **	1.70 (0.90, 3.22)	4.30 (1.82, 10.17) **	1.10 (0.55, 2.19)
Yes, but not in past 12 mos.	1.04 (0.64, 1.69)	1.20 (0.74, 1.93)	1.61 (1.00, 2.60) **	2.94 (1.39, 6.24) **	1.74 (1.04, 2.92) **
Never	Ref.	Ref.	Ref.	Ref.	Ref.
Health Insurance					
Yes	2.76 (1.64, 4.66) **	1.95 (1.18, 3.22) **	1.43 (0.83, 2.48)	1.14 (0.55, 2.34)	1.69 (0.95, 3.03)
No	Ref.	Ref.	Ref.	Ref.	Ref.
Illicit drug use, past 30 days ***					
Yes	0.90 (0.49, 1.65)	0.82 (0.49, 1.38)	0.83 (0.45, 1.53)	2.06 (1.05, 4.02) **	0.93 (0.48, 1.80)
No	Ref.	Ref.	Ref.	Ref.	Ref.

	HIV care utilization, past 6 months	HIV case management, past 12 months	Received psychological help, past 12 months	Alcohol or drug treatment, past 12 months	Missed any healthcare appointments, past 3 months
	(Odds Ratio, 95% Confidence Interval)	(OR, 95% CI)	(OR, 95% CI)	(OR, 95% CI)	(OR, 95% CI)
Ran out of money, past 12 months					
Yes	1.21 (0.72, 2.03)	1.29 (0.78, 2.13)	1.74 (1.02, 2.96)**	1.13 (0.57, 2.25)	1.86 (1.06, 3.25)**
No	Ref.	Ref.	Ref.	Ref.	Ref.
Heavy drinking, past 30 days					
Yes	0.83 (0.49, 1.41)	1.08 (0.63, 1.84)	0.86 (0.52, 1.44)	1.08 (0.56, 2.09)	1.36 (0.79, 2.34)
No	Ref.	Ref.	Ref.	Ref.	Ref.
Homelessness					
Yes	0.77 (0.49, 1.21)	1.18 (0.75, 1.87)	0.84 (0.54, 1.29)	1.45 (0.87, 2.43)	1.27 (0.80, 2.01)
No	Ref.	Ref.	Ref.	Ref.	Ref.
Time since first HIV diagnosis					
1 year or less	0.60 (0.33, 1.11)	0.44 (0.25, 0.79)**	0.32 (0.15, 0.65)**	0.51 (0.19, 1.39)	0.43 (0.22, 0.84)**
More than a year	Ref.	Ref.	Ref.	Ref.	Ref.

* Individuals are nested within study sites

** Odds ratios significant at p-value<0.05

*** Excluding marijuana