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Pain is associated with missed clinic visits among HIV-positive women

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Abstract

Background—Pain is highly prevalent among HIV-positive individuals, with women representing a large subset of those with pain. However, little is known about the relationship between pain and retention in HIV medical care. Among a cohort of HIV-positive women of color, we evaluated the association between pain and retention in care, as measured by missed clinic visits.

Methods—The Health Resources and Services Administration's Women of Color Initiative was a multi-site observational cohort study evaluating demonstration projects to engage HIV-positive women in medical care. From November 2010 to July 2013, 921 women were enrolled in the study across nine U.S. sites; baseline interviews collected data on socio-demographic, clinical, and risk behavior characteristics. Pain was assessed at baseline based on number of days in pain over the last 30 days and was categorized as no pain (0 days), infrequent pain (1–13 days), and frequent pain (14–30 days), with 14 days being the median. Missed visits over the one-year follow-up period, evaluated by chart abstraction, were dichotomized as 1 missed visit vs. >1 missed visit. We conducted multivariate logistic regression to assess the association between pain at baseline and missed visits, adjusting for pertinent covariates.

Results—Among our sample (N=862), 52.2% of women reported no pain, 23.7% reported infrequent pain and 24.1% reported frequent pain. Forty-five percent had >1 missed visit during

Compliance and Ethical Standards

Conflict of Interest

The authors declare that they have no competing interests.

Ethical Approval

All procedures performed in this study in accordance with the ethical standards of the Albert Einstein College of Medicine IRB, which are in keeping with the 1964 Helsinki declaration and its later amendments.

Informed Consent

This study was supported by the Albert Einstein College of Medicine IRB and informed consent was obtained from all individual participants included in the study.

the one-year follow-up period. Overall, we did not find a significant association between pain and missed visits (aOR 2.30; 95% CI 1.00–5.25). However, in planned stratified analyses, among women reporting current substance use at baseline, reporting frequent pain was associated with a higher odds of missed visits as compared with reporting no pain (aOR=15.14; 95% CI 1.78–128.88).

Conclusion—In our overall sample, pain was not significantly associated with missed visits. However, frequent pain was associated with missed visits among HIV-positive women of color who reported substance use at baseline. A better understanding of the relationship between pain and missed visits could guide efforts to improve retention in care in this population.

Keywords

HIV/AIDS; ambulatory care; pain; retention; substance abuse

Background

Pain is highly prevalent among individuals with HIV/AIDS, with estimates that 40% to 90% of HIV-positive individuals suffer from pain.^{1–3} In particular, chronic pain is common among PLWHA.^{4,5} Causes of pain in persons living with HIV/AIDS (PLWHA) are many and include HIV's direct effect on the nervous system causing neuropathy, side effects of antiretrovirals (ARVs), and other chronic conditions such as low back pain.^{1,2,4,6} Pain is associated with several clinical outcomes in PLWHA, including functional impairment and ARV adherence.^{7–9} Pain among PLWHA disproportionately affects women^{7,10} and racial and ethnic minority groups,^{1,11,12} therefore we were interested in examining pain in this population.

Similar to pain, retention in care influences clinical outcomes in PLWHA. The HIV treatment cascade—stages of which include diagnosis, linkage to care, retention in care, antiretroviral utilization, and viral suppression—is an important construct in the public health response to the HIV epidemic.^{13,14} Retention in care is one step of the cascade where many PLWHA are lost, with estimates that only approximately 50% of newly diagnosed individuals are linked and retained in care.^{15–17} Missed visits, or “no shows,” is one common way in which retention in care is operationalized because of the ease of its measurement and its relevance to clinical outcomes.^{11,18} A high number of missed visits is associated with poor ARV adherence, virologic failure, and increased mortality.^{19–21}

Because factors that increase the likelihood of having pain and of missing visits are similar, an association between pain and missed visits seems plausible. For example, in PLWHA, factors associated with pain include mood disorders, illicit substance use, ethnic minority status, and low socioeconomic status.^{2,9,11,22} Likewise, factors associated with increased missed visits include young age, ethnic minority status and alcohol or drug use.^{15,16,20,23} Thus, pain and missed visits share common risk factors. Despite this possible connectedness, few studies have explored the association between pain and retention in care.^{15,16,20} To our knowledge, there is only one study that explicitly examined the association between pain and missed visits among PLWHA living in Alabama and found that pain was significantly

associated with increased missed visits.²² However, that study examined mainly white HIV-positive men in one geographical region of U.S who were engaged in care.

We sought to broaden the gender, race and geographic focus of this research by examining the association between pain and missed visits in a cohort of HIV-positive women of color from multiple regions of the U.S at various levels of engagement in care. Based on both clinical reasoning and previous literature,^{8,22} we hypothesized that individuals with pain would consistently come to medical visits to obtain analgesic treatment for pain, and therefore be less likely to miss visits than those without pain. Additionally, because previous research on pain and retention in care among PLWHA found a high prevalence of illicit substance use,^{2,6,22,24} we also examined whether the association between pain and missed visits differed for women who reported substance use at baseline versus those who did not.

Methods

Setting

The Health Resources and Services Administration (HRSA) funded a prospective cohort study under the Special Projects of National Significance (SPNS) Initiative for Enhancing Access to and Retention in Quality HIV/AIDS Care for Women of Color. This HRSA initiative involved nine demonstration sites around the U.S who implemented varying programs to retain and engage HIV-positive women in medical care. Six study sites were primarily urban (Brooklyn, NY; Chicago, IL; Los Angeles, CA; Miami, FL; San Antonio, TX; Springfield, MA) and three were primarily rural (Anniston, AL, Chapel Hill, NC, Longview, TX). These nine interventions are described in detail elsewhere.^{25–27} The Evaluation and Technical Assistance Center (ETAC) for the initiative, located at Albert Einstein College of Medicine, was responsible for all cross-site research and evaluation activities.

Participants

From November 2010 to July 2013, 921 women were enrolled in the study. Women were eligible if they were at least 18 years old, HIV-infected, women of color, and in one of the following categories: newly diagnosed (defined as no evidence in the site's clinical record of a prior HIV diagnosis and the patient self-reports this is the first time she has been diagnosed), new to care (no prior HIV diagnosis and no previous clinical encounter at the study site based on site records), sporadic care (one visit in the last 12 months at the site based on site records), and lost to care (at least one visit in the last two years at the study site, without a visit to the site in the past 12 months based on site records).²⁶ Women were recruited using a variety of strategies including via health care provider referrals, community outreach, or by approaching participants at HIV testing centers. Informed consent was obtained at each site for all participants.

Data Source and Collection

Program staff at each site conducted baseline interviews using questionnaires that were developed by the ETAC in consultation with the demonstration projects. The baseline questionnaire covered clinical, risk behavior and socio-demographic characteristics and

included both novel and standardized instruments. Face-to-face interviews were held in English and Spanish in a private onsite room and lasted 40–90 minutes. All interviewers were trained by the ETAC in how to conduct interviews. ETAC staff, in conjunction with program staff, and independent nurse contractors extracted medical record data on CD4 count, viral load, and missed visits.

The dependent variable of interest was missed visits over a 1-year period. Each participant's medical record was reviewed for the one-year period after the baseline interview to identify all kept and missed visits. For our analyses, retention in care was measured using the number of missed visits. A missed visit was defined as any scheduled clinic visit with an HIV medical provider that was not kept. Missed visits were dichotomized as zero or one (≤ 1) or as more than one missed visit (>1), based on distribution of data and clinical consideration.

The independent variable of interest was baseline pain. Pain was assessed at baseline using the Center for Disease Control and Prevention's (CDC) Healthy Days Symptoms Module which asks: "During the past 30 days, for about how many days did pain make it hard for you to do your usual activities, such as self-care, work, or recreation?"^{28–31} Among those who reported pain, the median number of pain days was 14; therefore, we characterized pain as follows: (1) no pain days (2) infrequent pain days (1–13 days) and (3) frequent pain days (14–30 days). As there is no current standardized way to categorize pain days, we chose to categorize pain in this way as persons who reported no pain days were different from those reporting ≥ 1 pain days and the median number of pain days among those reporting ≥ 1 pain days was 14.

Other Variables

Socio-demographic variables were as follows: age; race (Latina, non-Latina black, other); level of completed education (less than high school education, high school or higher); housing status (rent/own, marginally housed [defined as institution/street/single room occupancy hotel/homeless]); health insurance status (uninsured, insured); monthly income (<\$1000, \$1000), foreign born (U.S. born, foreign born).

Risk behavior variables were history of a sexually transmitted infection, defined as history of STI (yes/no); illicit substance use defined as heroin, cocaine, amphetamines, crystal methamphetamines, or ecstasy within last 3 months (yes/no).

Clinical variables were frequency of depressive symptoms (<14 days, ≥ 14 days), physical inactivity (<14 days, ≥ 14 days), and viral load (categorized as undetectable (<50 copies/mL, detectable (≥ 50 copies/mL) and unmeasured). Total scheduled visits was defined as the sum of all missed and kept visits during the one-year follow-up period and dichotomized at the median (low [≤ 6], high [≥ 6]). We used the CDC's Healthy Days Symptoms Module and Healthy Days Core Module to evaluate depression and physical inactivity: "During the past 30 days, for about how many days have you felt sad, blue or depressed?" and "Thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?"²⁸

Statistical Analysis

To compare baseline characteristics by pain level and by missed visits, we used the Pearson chi-square test statistic to analyze categorical variables and the Mann-Whitney test statistic to evaluate continuous variables that were not normally distributed. To determine which variables to include in the multivariate logistic regression model, we accounted for intervention site by conducting a series of logistic regression analysis between missed visits and each covariate, clustered by site (see Table 2, unadjusted OR column). We chose a two-tailed p-value cutoff of 0.2 as the measure for inclusion into the multivariate model. All covariates that met the cutoff or were clinically relevant were retained in the final model. We evaluated for collinearity using the spearman rho test statistic and did not find any variables to be collinear (at a cutoff of rho = 0.7).³²

To test for an association between pain and missed visits, we created a multivariate logistic regression model with baseline pain as the independent variable of interest and missed visits as the dependent variable, with adjustment for covariates and clustering by intervention site. Because illicit substance use was found to modify the relationship between pain and missed visits among PLWHA in a prior study,²² we conducted an exploratory analysis to evaluate whether illicit substance use was an effect modifier by testing for the significance of the product term, --pain x substance use -- at a p<0.05 cutoff. The p-value of this product term was significant (p=0.02), therefore we stratified our models by illicit substance use to obtain stratum-specific odds ratios for the association between pain and missed visits. Because of the small sample size in the illicit substance use stratum, we created a parsimonious model including only variables that were significant (p<0.05). We used a full model (i.e. all covariates included) in the stratum without illicit substance use. Stata 13.1 was used for all statistical analyses.

Alternative analyses

We conducted additional analyses modifying how we operationalized our independent and dependent variables of interest. We changed our baseline pain variable from 0 days, 1–13 days, and 14–30 days to a continuous variable and conducted a multivariate logistic regression model with adjustments for covariates and intervention site. Because findings were similar in that a greater number of days of pain were associated with missed visits, we present only our main analyses described above. In addition, we conducted analyses changing our categorization of missed visits from 1 vs. >1 to 0 vs. 1 missed visits. Because findings were similar to those of the primary analyses described above, we present our primary analyses only. Finally, because women who were newly diagnosed with HIV can have different barriers and experiences related to retention in care,³³ in an alternative model, we limited the sample to only those who were not newly diagnosed. Because findings from the analyses with the limited sample were similar to findings from analyses that included the entire sample of women, we present the original analyses with all women, regardless of duration of HIV infection.

Results

Characteristics of overall sample

Of the 921 women in the parent study, 862 (94%) women had data on history of missed visits and therefore were included in this analysis. The majority of women in our study were racial/ethnic minorities, with 67.1% non-Latina black and 26.6% Latina (Table 1). Median age was 42 years. Three hundred and ninety-one participants (45.4%) had >1 missed visits within the year after enrollment. Pain was highly prevalent; while 52.2% of women reported no pain, 23.7% reported infrequent pain and 24.1% reported frequent pain. Forty-one percent of women received less than a high school education, 30.2% were uninsured and 81.4% were unemployed. Substance users comprised 13.2% of the population and 34.7% of women suffered from depression. Almost half of the women studied were taking ARVs and 52.7% had a detectable viral load (> 50 copies/mL).

Comparison of characteristics by pain frequency

There was a significant difference in education status among the three pain groups: women with infrequent and frequent pain (vs. no pain) were significantly more likely to have less than a high school education than women with no pain (46.1%, 46.2%, 36.2%, respectively; $p < 0.05$) (Table 1). In contrast to women who had no pain or infrequent pain, unemployment was highest in women who reported frequent pain days (79.9, 85.8, 91.4%, respectively; $p < 0.01$). Likewise, high days of depression and physical inactivity over a one-month period were significantly different by pain frequency (depression, $p < 0.01$; physical inactivity, $p < 0.01$, respectively). Illicit substance use was highest in those with frequent pain days.

Comparison of characteristics by missed visits

Women with >1 missed visit (vs. ≤ 1 missed visit) were more likely to report frequent pain (28.4% vs. 19.4%, $p < 0.01$) and to be younger (39.8 years vs. 44.0 years, $p < 0.01$). Likewise, women with >1 missed visit (vs. ≤ 1 visit) were also more likely to be unemployed (86.5% vs. 77.3%, $p < 0.01$), make $< \$1000$ /month (87.9% vs. 81.9%, $p < 0.05$), and report high days of physical inactivity and depression. Clinical measures were worse for women with more missed visits. These women with more missed visits (vs. ≤ 1 missed visit) were more likely to have detectable viral loads > 50 copies/mL (62.0% vs. 41.1%, $p < 0.01$) and were less likely to take ARVs (40.2% vs. 55.1%, $p < 0.01$). Illicit substance use was not significantly different by missed visit status.

Association of pain and missed visits

In multivariate logistic regression, pain was significantly associated with missed visits (Table 2). Compared to women with no pain days, women with frequent pain were more likely to have >1 missed visit (aOR=2.30; 95% CI: 1.00–5.25).

Models stratified by illicit substance use revealed an association between pain and missed visits (Table 3). However, this association was only present among women who reported illicit substance use. Compared to women with no pain, women with frequent pain who had illicit substance were more likely to have >1 missed visit (aOR=15.14; 95% CI: 1.78–

128.88). This association was not significant for women with infrequent pain compared to those without pain (aOR=1.29; 95% CI: 0.21–7.81).

Discussion

In our examination of the association between pain and missed visits among a cohort of HIV-positive women of color from various regions of the U.S enrolled in a retention-in-care initiative, pain was highly prevalent, with almost half of women reporting at least one day of disabling pain in the past month. Overall, we did not find a significant association between pain and missed visits. However, in planned analyses stratifying by current substance use, among women reporting current substance use at baseline, those reporting frequent pain were more likely to have missed visits in the follow-up year than those reporting no pain.

Our study contributes to the small but growing body of literature examining the association between pain and retention in care and is pertinent given the high prevalence of pain among PLWHA^{1–3} and the importance of retention for HIV clinical outcomes.¹³ Additionally, our study is unique because of the population of minority HIV-positive women, which included women who had previously been out of care. The study population and findings are important not only because pain is highly prevalent among women in particular,^{6,7,10,12} but also because women of color are disproportionately affected by HIV and are often lost to medical care.²⁶ While we did not find an association between pain and missed visits in the overall sample, by showing that pain may be a factor influencing engagement in care among women with substance use in this population, we highlight an area of research that warrants further examination with potential benefits for a vulnerable group.

In contrast to our study, the only other prior study examining the relationship between pain and missed visits involved a predominantly white HIV-positive male cohort in outpatient clinics. That study found the opposite of our results: that those with pain who used illicit substances were *less* likely to miss visits. These differences may be explained by the setting (Alabama) and the patient population (predominantly white HIV-positive men) which contrasts to our study's population of predominantly racial/ethnic minority women, many of whom were not engaged in HIV medical care at baseline.

Our findings contradict our initial hypothesis that presence of pain would result in less missed clinic visits, wherein we reasoned that individuals with pain would seek medical care to manage their pain symptoms. Our results may suggest other factors at play. For example, it may be that individuals with frequent pain and substance use may be self-medicating to treat their pain instead of seeking pain treatment with their medical provider.²² Indeed, if individuals are self-medicating with drugs and/or alcohol, this may interfere with their ability to attend their scheduled medical visits. Additionally, illicit substance users may not be likely to receive prescription opioids from wary clinicians, thereby discouraging them from engaging in the medical system. Alternatively, it is conceivable that individuals with frequent pain are in so much discomfort that they are unable to make it to their visits because of pain-induced disability. It is also possible that more frequent pain may actually be a marker of more frequent substance use and that frequent substance use is driving this apparent association between frequent pain and missed visits. Given the need to clarify the

specific factors driving the association between frequent pain and missed visits, further study is warranted.

There are several implications to our findings. By showing that pain and missed visits are positively related among women with current substance use, our study suggests that adequate treatment of pain may be one way in which providers can engage HIV-positive women in care. However, the interplay of illicit substance use may make the treatment of pain difficult, wherein clinicians may be reluctant to provide opioid treatment to individuals with previous or active illicit substance use history.³⁴ One way to address this would be to develop multidisciplinary strategies that treat both substance use and pain. These strategies should target women with pain and substance use early on to ensure improved engagement and retention in care. Furthermore, our study reinforces the importance of research on opioid treatment for pain among illicit substance users with HIV,^{11,35} particularly because our study suggests that pain may be influencing retention in care in this vulnerable population.

Our study has several limitations. First, our pain assessment tool measured pain over a 30-day period and, therefore, could have captured acute (less than three to six months), chronic (greater than three to six months), or acute-on-chronic pain. As we are unable to distinguish between these pain categories, this limits our ability to comment on the relationship between specific pain categories and missed visits. However, we note that the CDC measure of pain that we used is a reliable tool that has been used in a several other studies to measure pain and quality of life.^{30,36,37} Furthermore, our study represents an initial step in beginning to understand the association between pain and retention in HIV medical care. We anticipate our future studies will examine how specific pain categories may be associated with retention care. In particular, it would be important to examine the longitudinal relationship between chronic and retention in care over time. Second, certain key variables were incompletely captured. In particular, the chart abstractions did not assess whether a woman called to cancel a visit versus not giving notification before missing a visit, a distinction made in other missed visit studies which may reflect differences in healthcare-seeking behaviors.^{20,22} However, missed visits as presently measured still provides useful information for this analysis. Similarly, we recognize that our measure of drug use lacks specificity about the frequency of drug use and that this limitation may prevent us from drawing specific inferences. Specifically, we are unable to determine whether frequent pain may be a marker for frequent substance use and, as such, whether frequent substance use may be impacting care-seeking behaviors. Third, we did not capture prescription opioid use, and therefore we are not able to account for its impact on the relationship between pain and missed visits, which is important because opioid use could be a possible confounder.

Our study highlights the potential role of pain in retention in HIV medical care among HIV-positive women of color. Specifically, among women who reported current substance use, those with frequent pain were less likely to be retained in care as compared to those with no pain. Because this association between pain and missed visits may be due to lack of adequate treatment of pain, inability to get to medical visits, or competing interests if women are using illicit substances to treat pain, HIV medical providers should be aware of the vulnerabilities pain may pose to retaining HIV-positive women in care. Furthermore, given the role of illicit substance use in the relationship between pain and retention in care,

HIV treatment programs may improve patient outcomes by assessing for and addressing comorbid pain and illicit substance use.

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Table 1

Baseline characteristics of overall sample by pain (N=862)

	Overall sample N (%) N=862	No pain N (%) N=450	Infrequent Pain N (%) N=204	Frequent pain N (%) N=208	p-value
<i>Demographic Characteristics</i>					
>1 missed visit per year	391 (45.4)	197 (43.8)	79 (38.7)	115 (55.3)	<0.01
Age, years (median, IQR)	42 (32–49)	39 (29–47)	45 (38–52)	44 (36–50)	<0.01
Race					0.01
Latina	228 (26.6)	106 (23.6)	50 (24.9)	72 (34.6)	0.01
Non-Latina black	556 (67.1)	319 (71.1)	133 (66.2)	124 (60.0)	
Other	54 (6.3)	24 (5.4)	18 (9.0)	12 (5.7)	
Single	719 (84.1)	372 (82.3)	172 (84.3)	175 (84.1)	NS
Heterosexual	785 (91.3)	413 (92.2)	186 (91.2)	186 (89.4)	NS
Education less than high school	353 (41.0)	163 (36.2)	94 (46.1)	96 (46.2)	0.01
Foreign-born	146 (16.9)	82 (18.2)	29 (14.2)	45 (16.8)	NS
Marginally housed	318 (37.0)	160 (35.6)	76 (37.3)	82 (39.4)	NS
Uninsured	257 (30.2)	148 (32.3)	56 (28.0)	53 (25.6)	NS
Unemployed or disabled	702 (81.4)	337 (74.9)	175 (85.8)	190 (91.4)	<0.01
Monthly income <\$1000	709 (84.6)	347 (80.1)	178 (88.1)	184 (90.6)	<0.01
<i>Risk behavior characteristics</i>					
Current illicit substance use	112 (13.2)	43 (9.7)	33 (16.4)	36 (17.3)	<0.01
History of STI	373 (43.8)	194 (43.7)	94 (46.5)	85 (41.5)	NS
<i>Clinical Characteristics</i>					

	Overall sample N (%) N=862	No pain N (%) N=450	Infrequent Pain N (%) N=204	Frequent pain N (%) N=208	p-value
Taking antiretrovirals	415 (48.5)	204 (45.8)	109 (53.4)	102 (49.3)	NS
Detectable viral load (> 50 copies/mL)	454 (52.7)	244 (54.2)	107 (52.5)	103 (49.5)	NS
Undetectable (<50 copies/mL)	196 (22.7)	101 (22.4)	51 (32.5)	43 (20.7)	
Unmeasured	212 (24.6)	105 (23/3)	45 (22.1)	62 (29.8)	
Fair or poor health status	365 (42.5)	129 (28.8)	91 (44.6)	145 (70.1)	<0.01
Frequent depressive symptoms (> 14 days in past month)	295 (34.7)	105 (23.4)	65 (32.3)	125 (62.5)	<0.01
Frequent physical inactivity (> 14 days in past month)	227 (26.7)	33 (7.4)	54 (27.3)	140 (68.0)	<0.01
High no. of total scheduled visits (>6 visits/year)	378 (45.4)	195 (45.5)	86 (43.0)	97 (47.8)	NS

NS= not significant

Table II
Bivariate analysis and unadjusted and adjusted logistic regression models examining factors associated with missed visits.

	Missed Visits			p-value	Unadjusted OR (95% CI)		Adjusted OR (95% CI)	
	1 missed visit N (%) (N=471)	>1 missed visit N (%) (N=391)			(N=747)		(N=747)	
Pain								
No pain	ref	ref		<0.01	ref		ref	
Infrequent	125 (26.5)	79 (20.2)			0.81 (0.47–1.39)		0.93 (0.55–1.59)	
Frequent	93 (19.8)	115 (29.4)			1.59 (0.81–3.12)		2.30 (1.00–5.25)	
Median age in years (IQR)	44 (34–50)	40 (30–48)		<0.01	0.62 (0.41–0.94)		0.67 (0.52–0.87)	
Race								
Latina	ref	ref		<0.01	ref		ref	
Non-Latina black	335 (71.1)	245 (62.7)			0.53 (0.19–1.53)		0.66 (0.28–1.60)	
Other	40 (8.5)	14 (3.6)			0.25 (0.05–1.23)		0.35 (0.07–1.60)	
Heterosexual	441 (93.4)	346 (88.7)		0.02	1.81 (1.06–3.08)		1.69 (0.86–3.35)	
Unemployed or disabled	367 (77.4)	339 (86.5)		<0.01	1.86 (1.23–2.83)		1.19 (0.77–2.79)	
Monthly income <\$1000	379 (81.9)	333 (87.9)		0.02	0.62 (0.38–1.01)		0.83 (0.45–1.56)	
Uninsured	147 (31.2)	111 (28.8)		0.45	0.89 (0.43–1.85)		0.65 (0.37–1.14)	
History of STI	217 (46.5)	157 (40.5)		0.08	0.78 (0.63–1.00)		0.78 (0.63–0.97)	
Current illicit substance use	57 (12.2)	56 (14.4)		0.35	1.21 (0.48–3.03)		1.35 (0.53–3.44)	
Taking antiretrovirals	260 (55.1)	156 (40.2)		<0.01	0.55 (0.30–0.99)		0.63 (0.40–1.01)	
Viral load (copies/mL)								
Undetectable	ref	ref		<0.01	ref		ref	
Detectable	195 (41.1)	243 (62.0)			2.26 (1.55–3.30)		1.71 (1.17–2.51)	
Unmeasured	137 (28.9)	76 (19.4)			1.05 (0.57–1.95)		1.14 (0.80–1.64)	

	Missed Visits			Unadjusted OR (95% CI)	Adjusted OR (95% CI)
	1 missed visit N (%) (N=471)	>1 missed visit N (%) (N=391)	p-value	(N=747)	(N=747)
Frequent depressive symptoms (14 days in past month)	150 (32.1)	147 (34.9)	0.07	1.31 (0.94–1.81)	1.02 (0.80–1.31)
Frequent physical inactivity (14 days in past month)	121 (26.0)	106 (27.7)	0.58	1.09 (0.67–1.78)	0.62 (0.35–1.14)
High no. of total scheduled visits (>6 visits/year)	107 (23.5)	271 (71.3)	<0.01	8.11 (4.39–15.0)	7.28 (4.43–11.97)

OR= odds ratio; CI= confidence interval; ref= reference category

Table III

Adjusted logistic regression models of association between pain and missed visits by current illicit substance use

Adjusted OR (95% CI)	
<i>No Current Illicit Substance Use (N=650)</i>	
Pain	
No pain	ref
Infrequent	0.84 (0.51–1.42)
Frequent	1.70 (0.86–3.67)
Age 42 years	0.62 (0.46–0.85)
Race	
Latina	ref
Non-Latina black	0.66 (0.28–1.59)
Other	0.30 (0.07–1.30)
Heterosexual	1.73 (0.67–4.78)
Unemployed or disabled	1.20 (0.76–1.89)
Monthly income <\$1000	0.74 (0.39–1.40)
Uninsured	0.81 (0.41–1.61)
History of STI	0.78 (0.60–1.00)
Taking antiretrovirals	0.66 (0.38–1.13)
Viral load (copies/mL)	
Undetectable	ref
Detectable	1.79 (1.23–2.61)
Unmeasured	1.00 (0.66–1.52)
Frequent depressive symptoms (14 days in past month)	1.14 (0.81–1.61)
Frequent physical inactivity (14 days in past month)	0.69 (0.40–1.19)
High no. of total scheduled visits (>6 visits/year)	6.51 (3.55–11.94)
<i>Current Illicit Substance Use (N= 105)</i>	
Pain	
No pain	ref
Infrequent	1.29 (0.21–7.80)
Frequent	15.14 (1.78–128.88)
Age 42 years	1.28 (0.29–5.68)

Adjusted OR (95% CI)	
Race	
Latina	ref
Non-Latina black	0.48 (0.16–1.44)
Other	1.01 (0.20–5.07)
Taking antiretrovirals	0.58 (0.28–1.23)
Frequent physical inactivity (14 days in past month)	0.27 (0.06–1.20)
High no. of total scheduled visits (>6 visits/year)	19.67 (7.13–54.29)

OR= odds ratio; CI= confidence interval; ref= reference category