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Documentation of Psychiatric Disorders and Related Factors in a Large Sample Population of HIV-Positive Patients in California

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Abstract

This retrospective cohort study examined electronic medical records of HIV-positive patients in California (N=7,834) to find the prevalence of any psychiatric condition and the associations between several factors and the likelihood of these disorders. Approximately 53% of the patients in this study had a documented psychiatric condition, including 23% who had a mood disorder, 19% who had a substance-related disorder, and 16% who had an anxiety disorder. After controlling for potential confounders, significant positive associations ($p<0.001$) were found between female gender and the presence of any mood disorder (Adjusted Odds Ratio [95% Confidence Interval]=1.58[1.26–1.99]) or anxiety disorder (AOR=1.54[1.18–2.02]) and between homosexual orientation and the presence of any psychiatric condition (AOR=1.33[1.15–1.55]), mood disorder (AOR=1.71[1.42–2.07]), or anxiety disorder (AOR=1.41[1.22–1.88]). There were also significant negative associations between African American race and the presence of any psychiatric condition (AOR=0.68[0.60–0.77]), mood disorder (AOR=0.74[0.64–0.86]), anxiety disorder (AOR=0.43[0.36–0.52]), or substance-related disorder (AOR=0.78[0.67–0.91]) and between state/federal insurance and the presence of any psychiatric condition (AOR=0.70[0.62–0.79]), mood disorder (AOR=0.71[0.62–0.80]), or anxiety disorder (AOR=0.77[0.66–0.89]).

Keywords

AIDS; HIV; Psychiatric Disorders; Epidemiology

INTRODUCTION

A number of epidemiological studies have shown a substantial prevalence of psychiatric disorders in the HIV-positive population (1). Two studies that screened 2,864 and 1,125 HIV-positive patients found that 41 and 47 percent, respectively, of their samples met criteria for one or more psychiatric disorders (2–3). Because psychiatric comorbidity in HIV-positive patients is associated with decreased adherence to antiretroviral therapy (4), lower quality of life (5), higher health care costs (6), increased risk of suicide (7), more rapid

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progression of HIV infection (8), worse health outcomes, and ultimately increased mortality (9), the diagnosis of psychiatric disorder in HIV patients is of significant concern.

Mental health interventions for this population are effective in most instances, improving adherence to antiretrovirals (10), reducing risky sexual behaviors (11), and reducing the length of hospital stays (12). On a community level, mental health treatment decreases transmission rates by reducing community plasma viral loads and risky sexual behaviors (13). Fortunately, mental health care utilization is significantly greater among HIV-positive patients (14) than it is among the general public, where unmet need for mental health care is a serious public health problem (15). However, research suggests that utilization rates vary across populations based on several factors, such as race, employment status, insurance type, and socioeconomic class (14, 16–20). In the clinical setting, a diagnosis is usually documented before patients are urged to seek treatment for their mental health disorders; this clinical diagnosis is also correlated with greater utilization of services and with improved well-being (21,22).

Factors related to the utilization of mental health services may also be related to the clinical diagnosis of mental health disorders, but there is very limited epidemiological research exploring this relationship in HIV clinics. To help bridge this gap, this study analyzed electronic medical records from multiple HIV health care clinics in California and explored the influences of demographic factors on diagnosis. It was hypothesized that the demographic factors that influence the utilization of mental health services may also affect the diagnosis of psychiatric conditions in the clinical setting. The primary objective of this study was to explore the effects of these factors on the diagnosis of any psychiatric condition. The secondary objective was to explore how these factors affect the diagnosis of the three mental ailments most common in this population: mood disorders, anxiety disorders, and substance-related disorders.

METHODS

This retrospective cohort study reviewed all electronic medical records of HIV-positive patients in California (N = 7,834) receiving treatment in ambulatory care clinics linked to AIDS Healthcare Foundation (AHF). AHF has thirteen healthcare centers in California and accepts any patient over the age of 18 regardless of ability to pay. Medical specialists, psychiatrists, psychologists, therapists, and social workers provide comprehensive care designed specifically for HIV-positive patients at these centers. The institutional review board at University of California, Los Angeles, granted approval for this study.

Data Abstraction

All medical records were downloaded in December 2011, and the data was compiled in a database. AHF uses diagnostic codes from the ninth edition of the International Classification of Diseases, Clinical Modification (ICD-9-CM) to classify all medical and psychiatric disorders, and AHF clinical providers (i.e., primary care physicians, psychiatrists, social workers, etc.) entered diagnostic codes and demographic data based on clinical judgment and on patients' self-report. In the database, four dichotomized variables were listed for each patient indicating the presence or absence of any psychiatric condition (ICD-9 codes 290–319), any mood related disorder (ICD-9 codes 296.x), any anxiety related disorder (ICD-9 codes 300.x), and any substance related disorder (ICD-9 codes 291, 303–305). These three types of disorders were selected because they are the most prevalent in HIV-positive individuals (2,3).

Variables

To explore possible factors associated with the documentation of these psychiatric disorders, several covariates were analyzed: age, gender, sexual orientation, race, education, marital status, employment status, income, insurance type, HIV status, self-reported number of years since HIV diagnosis, and years since first visit to AHF. Age, self-reported number of years since first HIV diagnosis, and years since first visit to AHF were selected as potential continuum variables that may affect diagnosis of mental disorders: age (23–26) and the number of years with HIV (17) affect disease progression as well as physical and mental health, and there may be an association between the presentation of mental disorders and the number of visits (27). The other covariates were based on AHF's categorizations. Missing data was classified as "undocumented."

Statistical Analysis

All patient data was included in the analysis. First, the distributions of patients with any psychiatric condition, any mood disorder, any anxiety disorder, and any substance-related disorder were calculated. Next, the relationships between the presence of these disorders and each covariate were assessed using two-sided chi-square tests or T-tests. Regression models were conducted to assess effect size. Multiple logistic regression models that controlled for confounding variables were also used to understand the relative effect sizes for each variable. Four separate models were created using the presence of any psychiatric condition and the presence of each type of psychiatric disorder (mood, anxiety, or substance-related) as the dependent variables and the potential confounding variables as the independent variables. Adjusted odds ratios (AOR) and 95 percent confident intervals (95CI) were reported. SPSS 19.0 was used for all analyses.

RESULTS

Cohort Description

Demographic characteristics are described in Table 1. On average, this cohort was 44 years old (SD=10.44), reported being diagnosed with HIV infection 8.67 years ago (SD=6.94), and first presented to AHF 4.50 years ago (SD=2.83). According to their ICD-9 diagnostic documentation, 53% (n=4,115) were diagnosed with any psychiatric condition, 23% (n=1,784) with a mood disorder, 16% (n=1264) with an anxiety disorder, and 19% (n=1,474) with a substance-related disorder. The majority of this sample was male (88%, n=6,932), homosexual (67%, n=5,238), single (64%, n=5,046), unemployed (56%, n=4,398), with income at or below poverty level (53%, n=4,135), and had federal/state insurance (70%, n=5,490) (Table 1).

Differences Based on Covariates

There was a statistical difference ($p \leq 0.001$) between the presence of any psychiatric condition and each of the factors (age, gender, sexual orientation, race, education, marital status, employment status, income, insurance type, HIV status, years since first HIV diagnosis, and years since first AHF visit) (see Table 1 and Table 2). There were also statistical differences between the presence of any mood disorder, anxiety disorder, or substance-related disorder and many of these factors (see Table 1 and Table 2).

Association with Covariates

Patients with any documented psychiatric condition were statistically ($p \leq 0.001$) more likely to be transgender (Odds Ratio [95 Confidence Interval]: 5.25[3.22–8.57]) compared to male; to be homosexual (1.26[1.12–1.41]) or bisexual (1.39[1.18–1.64]) compared to heterosexual; to be unemployed (1.79[1.63–1.97]) compared to employed; and to have symptomatic HIV

(1.53[1.36–1.71]) or AIDS (1.36[1.22–1.51]) compared to asymptomatic HIV. In addition, patients with a documented psychiatric condition were statistically ($p \leq 0.001$) less likely to be African-American (0.76[0.67–0.85]) compared to White; to be married or with a domestic partner (0.76[0.60–0.88]) compared to single; to report income that was 101–200% of poverty level (0.80 [0.72–0.90]) or greater than 200% of poverty level (0.69 [0.59–0.81]) compared to at or below poverty level; and to have federal/state insurance (0.64 [0.58–0.71]) or self-pay/no insurance (0.45 [0.26–0.78]) compared to private insurance (Table 2). After controlling for potential confounders, statistical relationships still existed between the documentation of a psychiatric condition and several factors, including transgender, homosexual orientation, bisexual orientation, African-American race, unemployed status, income of 101–200% of poverty level, income greater than 200% of poverty level, federal/state insurance, and symptomatic HIV (see Table 3).

Any Mood, Anxiety, or Substance-related Disorders

The relationships between the covariates and the documentation of specific disorder types did not always match the relationships found between the covariates and the documentation of any psychiatric condition. When the three types of psychiatric disorders were analyzed separately, females, compared to males, were statistically more likely ($p \leq 0.001$) to have any mood disorder (1.58 [1.26–1.99]) or anxiety disorder (1.54 [1.18–2.02]) and less likely to have any substance-related disorder (0.48 [0.36–0.62]). Homosexuals, compared to heterosexuals, were not more likely to have any substance-related disorder (0.84 [0.70–1.02], $p > 0.05$) but were more likely ($p \leq 0.001$) to have any mood disorder (1.71 [1.42–2.07]) or anxiety disorder (1.51 [1.22–1.88]); bisexuals, compared to heterosexuals, were more likely to have any mood disorder (1.54 [1.22–1.95]) (see Table 3).

After controlling for potential confounders, notable negative relationships ($p \leq 0.001$ unless noted) between the covariates and the presence of specific disorder types that were similar to the relationship between the covariates and the presence of any psychiatric condition included African Americans and mood disorders (0.74 [0.64–0.86]), anxiety disorders (0.43 [0.36–0.52]), and substance-related disorders (0.78 [0.67–0.91], $p = 0.002$) and federal/state insurance and mood disorders (0.71 [0.62–0.80]) and anxiety disorders (0.77 [0.66–0.89]). Similar positive relationships included unemployed status and any mood disorder (1.76 [1.56–2.00]), anxiety disorder (1.36 [1.19–1.56]), or substance-related disorder (1.93 [1.68–2.20]). The relationships between years since first AHF visit and any mood disorder (1.06[1.03–1.09]) and between years since first AHF visit and any anxiety disorder (1.07[1.03–1.10]) were also similar to the relationship between this covariate and any psychiatric condition (see Table 3).

DISCUSSION

This study explored the documentation of psychiatric disorders, including mood, anxiety, and substance-related disorders, in a large clinical sample of HIV-positive patients (N=7,834). The prevalence rate of psychiatric conditions in this sample (53%) confirms the findings of previous epidemiological studies that demonstrate a high proportion of HIV-positive patients with psychiatric comorbidity, especially comorbid mood (23%), anxiety (16%), and substance-related disorders (19%)(see Table 1) (2,3). This study found rates similar to those found in previous studies, and this study noted several covariates that were strongly related to the documentation of psychiatric conditions.

Gender and Sexual Orientation

The prevalence of specific types of psychiatric disorders were found to differ based on gender and sexual orientation. Although approximately half of the males and females in this

sample had a documented psychiatric condition, after controlling for confounding variables this study found that females were more likely to have mood or anxiety disorders and less likely to have substance-related disorders. This is similar to the distributions found in the general public (28) and in HIV clinics, which demonstrate a higher prevalence of psychiatric comorbidity in females (1, 29–32). Compared to heterosexuals, homosexuals were more likely to have any psychiatric condition, mood disorder, or anxiety disorder, while bisexuals were more likely to have any psychiatric condition and any mood disorder, reinforcing the idea that non-heterosexuals may have increased problems with mental health (33,34).

Race

A lower prevalence of psychiatric conditions, including any mood, anxiety, or substance-related disorder, was found among African-Americans. This is congruent with results obtained by Pence and colleagues, who found that Caucasian HIV-infected patients were more likely to screen positive for mood and anxiety disorders than were members of any other race (3). Similarly, using a diagnostic screening, the HIV Cost and Services Utilization Study (HCSUS) reported lower rates of psychiatric diagnoses in HIV-positive African-Americans compared to Caucasians (2). Some speculation has arisen that lower detection rates of psychiatric disorders in minority populations may be due to disparities in health care (35). While some believe that minorities are at decreased risk for psychiatric disorders (36), others maintain that cultural factors affect both patient reporting and clinician interpretation of psychiatric disorders (37).

Insurance Type

This study found that patients with federally or state-funded insurance were less likely to have a documented psychiatric condition than those with private health insurance, reaffirming research that indicates insurance status may influence utilization of mental health services as well as outcomes (14, 38–42). In the HCSUS study, those with state or private insurance, compared to those without insurance, were more likely to utilize mental health services, including medications, outpatient visits, and residential treatments (20). These findings suggest that while some populations may be at equally high risk for psychiatric conditions, their mental health issues may be less clinically recognized due to insurance type or lack of insurance.

Other Covariates

Two other findings were similar to the HCSUS study. First, unemployment was associated with an increased prevalence of psychiatric disorders (2), implying that employment is associated with better mental health for individuals living with HIV (43). Second, a higher number of years since the patient's first visit to the clinic was associated with increased documentation of a psychiatric condition. This is similar to the HCSUS finding that under-diagnosis in patients' charts correlated to the number of visits (44). This may imply either that psychiatric conditions become more pronounced as HIV progresses or that the mental health services available to HIV patients are inadequate for correctly diagnosing psychiatric conditions quickly (20).

Limitations and Future Research

The largest limitations of this study were the ambiguity in the source of documentation and the reliance on ICD-9-CM codes. Diagnostic codes listed in the electronic medical records were inserted by many different healthcare employees (physicians, nurses, social workers, psychologists, etc.), and it is unknown whether documentation was based on patient histories, diagnostic screens, or clinical judgment. The rates of diagnosis reported here, therefore, cannot be seen as approximations of clinical diagnostic rates because there is no

evidence that diagnoses were reached through a standardized approach. Nevertheless, other researchers have utilized similar databases (i.e., Veterans' Affairs national databases) and have used ICD-9-CM codes extensively for clinical epidemiological research (45). The second limitation of this study involves the complexities associated with recording patient characteristics. This information was not verified, recorded by different staff members, and missing for some. For one characteristic, 40% of the sample did not have a documented race. Since these clinics are located in communities with large Hispanic populations, missing racial data may be due to vague documentation of race for those with Hispanic descent. This impreciseness further exhibits the known challenges associated with racial and ethnicity clinical data (46). Another limitation was that the sample included only those patients presenting to AHF. While this may introduce sampling bias, the large sample size and the multiple AHF clinics included in this study provide some generalizability of these results to 'real-world' clinics treating HIV-positive individuals (47).

Clinically, this study highlights the need for effective recognition of psychiatric comorbidity in HIV-positive patients. Since research has demonstrated that psychiatric disorders and interventions have a substantial influence on physical as well as mental health outcomes for HIV-positive patients, certain populations may benefit from routine mental health screenings. Findings from this study can help HIV healthcare clinics create more focused and effective programs aimed at detecting patients with undiagnosed psychiatric disorders. Further research could also evaluate whether additional screening for patients with under-detected mental illnesses is clinically beneficial in utilization of mental health treatment services.

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Table 1

Prevalence of any psychiatric condition and any mood, anxiety, and substance-related disorder

Characteristic	Total Sample (N=7834)	Any Psychiatric Condition (n=4115, 53%)	Any Mood-Related Disorder (n=1784, 23%)	Any Anxiety-Related Disorder (n=1264, 16%)	Any Substance-Related Disorder (n= 1474, 19%)
Age (years)					
Mean	43.57	44.28***	45.19***	44.53***	42.05***
S.D.	10.44	9.88	9.24	9.79	9.50
Gender					
Male	88% (6962)	52% (3634)***	23% (1573)	16% (1124)	20% (1355)***
Female	9% (738)	50% (370)	25% (185)	16% (120)	12% (85)
Transgender	2% (128)	85% (109)	20% (25)	14% (18)	26% (33)
Undocumented	0.1% (6)	33% (2)	17% (1)	33% (2)	17% (1)
Sexual Orientation					
Heterosexual	20% (1536)	48% (735)***	19% (297)**	13% (202)***	17% (259)***
Homosexual	67% (5238)	54% (2808)	24% (1243)	17% (913)	19% (987)
Bisexual	11% (869)	56% (487)	24% (207)	15% (128)	23% (200)
Undocumented	2% (191)	45% (85)	19% (37)	11% (21)	15% (28)
Race					
White	37% (2888)	58% (1676)***	26% (746)***	21% (598)***	21% (617)***
African-American	22% (1758)	51% (899)	22% (386)	11% (184)	20% (347)
Other	1% (93)	56% (52)	19% (18)	15% (14)	34% (32)
Undocumented	40% (3095)	48% (1488)	31% (634)	15% (468)	15% (478)
Education					
Below HS Degree	9% (698)	50% (350)*	22% (150)	12% (84)*	16% (113)***
HS or vocational degree	39% (3075)	55% (1672)	24% (726)	16% (498)	22% (667)
Some college or higher	37% (2906)	53% (1525)	23% (676)	17% (495)	17% (497)
Undocumented	15% (1155)	49% (568)	20% (232)	16% (187)	17% (197)
Marital Status					
Single	64% (5046)	54% (2727)***	24% (1184)*	16% (820)	20% (1005)***
Married/Domestic Partner	6% (428)	46% (197)	18% (75)	14% (59)	13% (56)
Separated/Divorced/Widowed	1% (92)	48% (44)	23% (21)	15% (14)	14% (13)
Undocumented	29% (2268)	51% (1147)	22% (504)	16% (371)	18% (400)

Characteristic	Total Sample (N=7834)	Any Psychiatric Condition (n=4115, 53%)	Any Mood-Related Disorder (n=1784, 23%)	Any Anxiety-Related Disorder (n=1264, 16%)	Any Substance-Related Disorder (n= 1474, 19%)
Employment Status					
Employed	40% (3092)	44% (1363)***	17% (517)***	14% (434)***	13% (409)***
Unemployed	56% (4398)	59% (2576)	27% (1196)	17% (765)	23% (1015)
Undocumented	4% (344)	51% (176)	21% (71)	19% (65)	15% (50)
Income					
Equal or below Poverty Level	53% (4135)	56% (2294)***	25% (1025)***	17% (694)	21% (868)***
101–200% of Poverty Level	24% (1912)	50% (956)	23% (431)	16% (303)	16% (306)
> 200% of Poverty Level	9% (683)	46% (316)	17% (119)		13% (90)
Undocumented	14% (1104)	50% (549)	19% (209)	16% (106)	19% (210)
Insurance Type					
Private	26% (1973)	61% (1195)***	30% (590)***	20% (395)***	19% (371)*
Federal/State	70% (5490)	50% (2727)	21% (1124)	15% (821)	18% (1012)
None/Self-Pay	1% (54)	41% (22)	13% (7)	6% (3)	19% (10)
Undocumented	4% (317)	54% (171)	20% (63)	14% (45)	26% (81)
HIV Status					
Asymptomatic No AIDS	30% (2353)	47% (1101)***	18% (415)***	14% (324)**	19% (440)***
Symptomatic No AIDS	30% (2336)	57% (1339)	25% (586)	18%(410)	21% (489)
AIDS	38% (2971)	54% (1616)	26% (765)	17% (505)	18% (530)
Undocumented	2% (174)	34% (59)	10% (18)	14% (25)	9% (15)
Years since HIV Diagnosis					
Mean	8.67	9.26***	10.13***	9.55***	8.11***
S.D.	6.94	6.98	6.98	6.98	6.79
Years Since First AHF Visit					
Mean	4.50	4.77***	5.09***	4.97***	4.37*
S.D.	2.83	2.76	2.67	2.70	2.79

For all columns except first, reported percentage indicate the percent of patients with diagnoses per characteristic. First column indicates percent of sample per characteristic.

Chi-square or T-test analysis conducted to analyze differences per characteristic (*: $0.05 \leq p < 0.01$;**: $0.01 \leq p < 0.001$;***: $p \leq 0.001$)

Table 2

Association Between Presence of Any Psychiatric Condition and Any Mood, Anxiety, and Substance-Related Disorder (Odds Ratio and 95 Percent CI)

Characteristic	Any Psychiatric Condition	Any Mood-Related Disorder	Any Anxiety-Related Disorder	Any Substance-Related Disorder
Age (years)	1.01 (1.01–1.02) ***	1.02 (1.01–1.03) ***	1.01 (1.01–1.02) ***	0.98 (0.98–0.99) ***
Gender				
Male	1	1	1	1
Female	0.92 (0.79–1.07)	1.15 (0.96–1.37)	1.01 (0.82–1.24)	0.54 (0.43–0.68) ***
Transgender	5.25 (3.22–8.57) ***	0.83 (0.54–1.29)	0.85 (0.51–1.41)	1.44 (0.96–2.15)
Undocumented	0.46 (0.08–2.50)	0.69 (0.08–5.87	2.60 (0.48–14.20)	0.83 (0.10–7.09)
Sexual Orientation				
Heterosexual	1	1	1	1
Homosexual	1.26 (1.12–1.41) ***	1.30 (1.13–1.50) ***	1.39 (1.18–1.64) ***	1.15 (0.99–1.33)
Bisexual	1.39 (1.18–1.64) ***	1.30 (1.07–1.60) *	1.14 (0.90–1.45)	1.47 (1.20–1.81) ***
Undocumented	0.87 (0.65–1.18)	1.00 (0.69–1.47)	0.82 (0.51–1.31)	0.85 (0.56–1.29)
Race				
White	1	1	1	1
African-American	0.76 (0.67–0.85) ***	0.81 (0.70–0.93) **	0.45 (0.38–0.53) ***	0.91 (0.78–1.05)
Other	0.92 (0.61–1.39)	0.69 (0.41–1.16)	0.68 (0.38–1.21)	1.93 (1.25–2.99) **
Undocumented	0.67 (0.61–0.74) ***	0.74 (0.66–0.84) ***	0.68 (0.60–0.78) ***	0.67 (0.59–0.77) ***
Education				
Below HS Degree	1	1	1	1
HS or vocational degree	1.19 (1.01–1.40) *	1.13 (0.93–1.38)	1.41 (1.10–1.81) **	1.43 (1.15–1.79) ***
Some college or higher	1.10 (0.93–1.30)	1.11 (0.91–1.35)	1.50 (1.17–1.92) ***	1.07 (0.85–1.34)
Undocumented	0.96 (0.80–1.16)	0.92 (0.73–1.16)	1.41 (1.07–1.86) *	1.06 (0.83–1.37)
Marital Status				
Single	1	1	1	1
Married/Domestic Partner	0.73 (0.60–0.88) ***	0.69 (0.54–0.90) **	0.82 (0.62–1.10)	0.61 (0.45–0.81) ***
Separated/Divorced/Widowed	0.78 (0.52–1.18)	0.97 (0.59–1.58)	0.93 (0.52–1.64)	0.66 (0.37–1.19)
Undocumented	0.87 (0.79–0.96) **	0.93 (0.83–1.05)	1.01 (0.88–1.15)	0.86 (0.76–0.98) *
Employment Status				
Employed	1	1	1	1
Unemployed	1.79 (1.63–1.97) ***	1.86 (1.66–2.09) ***	1.29 (1.14–1.47) ***	1.97 (1.74–2.23) ***
Undocumented	1.33 (1.06–1.66) *	1.30 (0.98–1.71)	1.43 (1.07–1.90) *	1.12 (0.81–1.53)
Income				
Equal or below Poverty Level	1	1	1	1
101–200% of Poverty Level	0.80 (0.72–0.90) ***	1.41 (1.20–1.67) ***	1.18 (0.98–1.42)	1.13 (0.96–1.34)
> 200% of Poverty Level	0.69 (0.59–0.81) ***	1.25 (1.04–1.50) *	1.10 (0.90–1.36)	0.81 (0.67–0.99) *
Undocumented	0.79 (0.70–0.91) ***	0.90 (0.71–1.16)	1.08 (0.83–1.40)	0.65 (0.49–0.85) ***

Characteristic	Any Psychiatric Condition	Any Mood-Related Disorder	Any Anxiety-Related Disorder	Any Substance-Related Disorder
Insurance Type				
Private	1	1	1	1
Federal/State	0.64 (0.58–0.71) ***	0.60 (0.54–0.68) ***	0.70 (0.62–0.80) ***	0.98 (0.86–1.11)
None/Self-Pay	0.45 (0.26–0.78) **	0.35 (0.16–0.78) **	0.24 (0.07–0.76) *	0.98 (0.49–1.97)
Undocumented	0.76 (0.60–0.97) *	0.58 (0.43–0.78) ***	0.66 (0.47–0.92) *	1.48 (1.12–1.95) **
HIV Status				
Asymptomatic No AIDS	1	1	1	1
Symptomatic No AIDS	1.53 (1.36–1.71) ***	1.56 (1.36–1.80) ***	1.33 (1.14–1.56) ***	1.15 (1.00–1.33)
AIDS	1.36 (1.22–1.51) ***	1.62 (1.42–1.85) ***	1.28 (1.10–1.49) ***	0.94 (0.82–1.10)
Undocumented	0.58 (0.42–0.81) ***	0.54 (0.33–0.89) *	1.05 (0.68–1.63)	0.41 (0.24–0.70) ***
Years since HIV Diagnosis	1.03 (1.02–1.03) ***	1.04 (1.03–1.05) ***	1.02 (1.01–1.03) ***	0.99 (0.98–0.99) ***
Years Since First AHF Visit	1.08 (1.06–1.09) ***	1.10 (1.08–1.12) ***	1.07 (1.05–1.10) ***	0.98 (0.96–1.00)

* $0.05 \leq p < 0.01$;

** $0.01 \leq p < 0.001$;

*** $p \leq 0.001$

Table 3

Association Between Presence of Any Psychiatric Condition and Any Mood, Anxiety, and Substance-Related Disorder After Controlling for Potential Confounders (Adjusted Odds Ratio and 95 Percent CI)

Characteristic	Any psychiatric condition	Any mood-related disorder	Any anxiety-related disorder	Any substance-related disorder
Age (years)	1.00 (1.00–1.01)	1.00 (1.00–1.01)	1 (0.99–1.01)	0.98 (0.97–0.99) ***
Gender				
Male	1	1	1	1
Female	1.07 (0.89–1.30)	1.58 (1.26–1.99) ***	1.54 (1.18–2.02) ***	0.48 (0.36–0.62) ***
Transgender	5.14 (3.13–8.45) ***	0.74 (0.47–1.16)	0.87 (0.52–1.45)	1.37 (0.91–2.07)
Undocumented	0.51 (0.09–2.88)	1.05 (0.12–9.45)	4.31 (0.76–24.58)	0.48 (0.05–4.22)
Sexual Orientation				
Heterosexual	1	1	1	1
Homosexual	1.33 (1.15–1.55) ***	1.71 (1.42–2.07) ***	1.51 (1.22–1.88) ***	0.84 (0.70–1.02)
Bisexual	1.39 (1.15–1.69) ***	1.54 (1.22–1.95) ***	1.24 (0.94–1.64)	1.05 (0.83–1.32)
Undocumented	0.98 (0.71–1.35)	1.29 (0.86–1.92)	0.80 (0.48–1.31)	0.75 (0.48–1.18)
Race				
White	1	1	1	
African-American	0.68 (0.60–0.77) ***	0.74 (0.64–0.86) ***	0.43 (0.36–0.52) ***	0.78 (0.67–0.91) **
Other	0.93 (0.60–1.44)	0.71 (0.42–1.21)	0.69 (0.38–1.24)	1.82 (1.16–2.87) **
Undocumented	0.67 (0.60–0.75) ***	0.79 (0.69–0.90) ***	0.73 (0.64–0.84) ***	0.61 (0.53–0.70) ***
Education				
Below HS Degree	1	1	1	
HS or vocational degree	1.17 (0.98–1.40)	1.15 (0.93–1.41)	1.46 (1.13–1.89) **	1.23 (0.98–1.55)
Some college or higher	1.11 (0.93–1.34)	1.17 (0.94–1.46)	1.53 (1.18–2.00) **	0.92 (0.72–1.17)
Undocumented	1.05 (0.86–1.29)	1.08 (0.84–1.38)	1.59 (1.19–2.13) **	0.96 (0.74–1.26)
Marital Status				
Single	1	1	1	
Married/Domestic Partner	0.77 (0.63–0.95) *	0.72 (0.55–0.94) *	0.88 (0.65–1.18)	0.69 (0.51–0.94) *
Separated/Divorced/Widowed	0.80 (0.52–1.22)	0.99 (0.59–1.64)	1.02 (0.57–1.84)	0.76 (0.42–1.41)
Undocumented	0.84 (0.76–0.93) ***	0.90 (0.80–1.02)	0.96 (0.84–1.11)	0.88 (0.77–1.00)
Employment Status				
Employed	1	1	1	
Unemployed	1.72 (1.56–1.91) ***	1.76 (1.56–2.00) ***	1.36 (1.19–1.56) ***	1.93 (1.68–2.20) ***
Undocumented	1.32 (1.04–1.66) *	1.22 (0.92–1.64)	1.42 (1.05–1.92) *	1.21 (0.87–1.68)
Income				
Equal or below Poverty Level	1	1	1	
101–200% of Poverty Level	0.77 (0.68–0.86) ***	0.81 (0.71–0.93) **	0.87 (0.74–1.01)	0.81 (0.69–0.94) **
> 200% of Poverty Level	0.72 (0.60–0.86) ***	0.66 (0.53–0.83) ***	0.81 (0.64–1.03)	0.71 (0.56–0.91) **
Undocumented	0.86 (0.75–0.99) *	0.75 (0.63–0.90) ***	0.86 (0.71–1.05)	0.95 (0.79–1.13)

Characteristic	Any psychiatric condition	Any mood-related disorder	Any anxiety-related disorder	Any substance-related disorder
Insurance Type				
Private	1	1	1	
Federal/State	0.70 (0.62–0.79) ***	0.71 (0.62–0.80) ***	0.77 (0.66–0.89) ***	0.90 (0.78–1.04)
None/Self-Pay	0.58 (0.33–1.01)	0.50 (0.22–1.13)	0.30 (0.09–0.97) *	0.95 (0.47–1.96)
Undocumented	0.84 (0.65–1.08)	0.71 (0.53–0.97) *	0.74 (0.52–1.04)	1.25 (0.94–1.68)
HIV Status				
Asymptomatic No AIDS	1	1	1	
Symptomatic No AIDS	1.34 (1.19–1.51) ***	1.33 (1.15–1.54) ***	1.22 (1.04–1.44) *	1.15 (0.99–1.34)
AIDS	1.03 (0.91–1.16)	1.15 (0.99–1.33)	1.05 (0.89–1.24)	0.96 (0.82–1.12)
Undocumented	0.69 (0.49–0.96) *	0.67 (0.40–1.13)	1.32 (0.84–2.09)	0.34 (0.19–0.60) ***
Years since HIV Diagnosis	1.01 (1.00–1.02)	1.02 (1.01–1.03) **	1.00 (0.99–1.02)	0.99 (0.98–1.00)
Years Since First AHF Visit	1.06 (1.04–1.08) ***	1.06 (1.03–1.09) ***	1.07 (1.03–1.10) ***	1.03 (1.00–1.06)

* 0.05≤p<0.01;

** 0.01≤p<0.001;

*** $p \leq 0.001$