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Prevalence of diagnosed and undiagnosed depression among U.S. adults with HIV: Data from the Medical Monitoring Project

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Abstract

People with HIV (PWH) are disproportionately affected by depression but recent national estimates for U.S. PWH encompassing both current symptoms and clinical diagnoses to assess missed diagnoses and lack of symptom remission are lacking. We used data from CDC's Medical Monitoring Project (MMP) to report nationally representative estimates of diagnosed and undiagnosed depression among U.S. adult PWH. During 6/2021–5/2022, MMP collected interview data on symptoms consistent with major or other depression and depression diagnoses from medical records of 3,928 PWH. We report weighted percentages and prevalence ratios (PRs) to quantify differences between groups on key social and health factors. Overall, 34% of PWH experienced any depression (diagnosis or PHQ-8); of these, 26% had symptoms but no diagnosis (undiagnosed depression), 19% had both diagnosis and symptoms, and 55% had a diagnosis without symptoms. Among those with depression, persons with a disability (PR:1.52) and food insecurity (PR:1.67) were more likely to be undiagnosed. Unemployed persons (PR:1.62), those experiencing a disability (PR:2.78), food insecurity (PR:1.46), or discrimination in HIV care (PR:1.71) were more likely to have diagnosed depression with symptoms. Those with symptoms (undiagnosed or diagnosed) were less likely to be ART dose adherent (PR:0.88; PR:0.73) or have sustained viral suppression (PR:0.62; PR:0.91) and were more likely to have unmet needs for mental health services (PR:2.38, PR:2.03). One-third of PWH experienced depression, of whom nearly half were undiagnosed or still experiencing clinically relevant symptoms. Expanding screening and effective treatment for depression could improve quality of life and HIV outcomes.

Keywords

human immunodeficiency virus; HIV; mental health; depression

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Consent: Informed consent was obtained from all respondents.

Introduction

People with HIV (PWH) in the United States are disproportionately affected by depression. Studies comparing people with and without HIV have estimated the prevalence of current major depression to be 2–3 times higher among PWH, although disparities may be attenuated after accounting for social determinants of health such as poverty.[1,2] Similar differences in lifetime depression have been found between people with and without other chronic diseases, such as diabetes[3]. Estimates of current depression range between 9.4–43.0 among PWH and 5.2–11.6 among people without HIV, although populations, measures and methods vary.[1,2,4–11] However, to date estimates of the prevalence of depression among PWH have been limited to those receiving HIV care, are not recent, are not national in scope or representative of the US population of PWH, or have not used combined data that included depression symptoms, depression treatment, and medical record diagnoses,[2,4–8] which can provide a more complete assessment of depression among U.S. PWH.

Such an assessment is important because undiagnosed, untreated, or ineffectively treated depression have negative effects on quality of life (QoL) and are associated with poor HIV outcomes.[12,13] However, effective treatments for depression exist.[14,15] In 2023 the U.S. Preventive Services Task Force (USPSTF) recommended universal depression screening for all adults.[16] Decreasing unmet need for mental health services among PWH is a goal of the U.S. National HIV/AIDS Strategy.[17] However, studies estimate that depression among PWH is underdiagnosed and, even when diagnosed, many PWH do not receive adequate treatment and have not achieved remission.[18] Effectively diagnosing and treating depression could improve QoL, HIV outcomes, and help attain the goals of the Ending the HIV Epidemic in the United States (EHE) initiative.[15,17,19]

To fill these gaps, we used recent interview and medical record data from CDC's Medical Monitoring Project (MMP) to report nationally representative estimates of undiagnosed depression (current symptoms but no diagnosis), diagnosed depression with current symptoms, and diagnosed depression without current symptoms among U.S. PWH, and explore associations with demographic, socioeconomic, behavioral, and clinical factors.

Methods

Detailed MMP methods have been previously described.[20,21] The first stage involved sampling 23 jurisdictions from all U.S. states, the District of Columbia, and Puerto Rico. Second, simple random samples of adults with diagnosed HIV are drawn annually for each participating state/territory from the National HIV Surveillance System (NHSS), a census of U.S. persons with diagnosed HIV. For this analysis, we used data from 3,928 respondents from the 2021 MMP data collection cycle spanning June 2021 through May 2022. Data were collected via phone or in-person interviews and medical record abstractions at the person's reported most frequent source of HIV medical care during the 2 years prior to interview. Questionnaire completion took approximately 40 minutes and was available in English, Spanish, or via a professional interpreter for non-English or Spanish speakers. Questionnaires were administered by trained interviewers and 10% of interviews were evaluated for quality control purposes. State/territory response rates were 100% and person-

level response was 44%. Data were weighted based on probabilities of selection, adjusted for nonresponse, and post-stratified to NHSS population totals by sex, race/ethnicity, and age. MMP is an ongoing public health surveillance activity and thus Institutional Review Board approval was not required although two participating jurisdictions chose to obtain local approvals. Informed consent was given by all respondents.

MMP collected interview data on depression symptoms consistent with a diagnosis of major or other depression using the Patient Health Questionnaire (PHQ-8), an 8-item scale used to measure frequency of depression symptoms in the preceding 2 weeks.[22] Respondents were asked how frequently they experienced the following: (1) little interest or pleasure in doing things (anhedonia); (2) feeling down, depressed, or hopeless; (3) trouble falling/staying asleep, or sleeping too much; (4) feeling tired or having little energy; (5) poor appetite or overeating; (6) feeling bad about yourself or that you are a failure or have let yourself or your family down; (7) trouble concentrating on things, such as reading the newspaper or watching television; and (8) moving or speaking so slowly that other people could have noticed, or being fidgety or restless or moving around a lot more than usual. Response categories were “not at all,” “several days,” “more than half the days,” and “nearly every day” with points (0–3) assigned to each response category, respectively. Following scoring recommendations from Kroenke et al,[14] the responses were scored using an algorithm involving criteria from the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV-TR) for diagnosing major depression and “other depression.”[23] To meet the criteria for major depression, a respondent must have experienced 5 or more symptoms at least “more than half the days,” and one of the symptoms must be anhedonia or feelings of hopelessness. For “other depression,” a respondent must have experienced 2 to 4 symptoms at least “more than half the days,” and one of the symptoms must be anhedonia or feelings of hopelessness. The PHQ-8 classification “other depression” comprises the DSM-IV categories of dysthymia, and depressive disorder/not otherwise specified, which includes minor or subthreshold depression. Respondents were then categorized as experiencing current symptoms of major or other depression versus no depression symptoms.

MMP collected information documented in the person’s medical record on mental health diagnoses and antidepressant and other psychiatric medications prescriptions during the two-year retrospective observation period ending on the interview date. Records included discharge diagnoses and medications from outpatient hospitalizations if they were included in the person’s records at their outpatient HIV care provider. Diagnoses were abstracted if documented in a provider progress note or problem list during the two-year observation period, or on a problem list before the two-year observation period and not marked resolved. Depression diagnoses abstracted included major depression, depression, depressed mood, dysthymia, bipolar disorder, or depressive disorder not otherwise specified. Respondents with any of these diagnoses were categorized as having a depression diagnosis. Other mental health diagnoses collected included anxiety, nonspecific mood disorders, and other psychiatric disorders.

Using combined information on depression symptoms and diagnoses, respondents were categorized as having undiagnosed depression (current symptoms of major or other depression without a medical record diagnosis of depression), diagnosed depression with

current symptoms (current symptoms of major or other depression with a medical record diagnosis of depression), diagnosed depression without current symptoms (no current symptoms of major or other depression with a medical record diagnosis of depression), and no depression (no current symptoms of major or other depression and no medical record diagnosis of depression). Any depression was defined as being undiagnosed or diagnosed with or without symptoms. Covariates of interest included demographics, social determinants of health (e.g., poverty, food insecurity, employment status), intimate partner and sexual violence, HIV stigma and discrimination in HIV care settings, HIV outcomes (e.g., ART adherence, HIV care engagement, viral suppression), substance use, sex without the use of an HIV prevention strategy, and other mental health factors (e.g., self-identified use of and need for mental health services, other mental health diagnoses and medication use). Covariates were based on the past 12 months, except where otherwise noted; definitions are included in the table footnotes.

We reported weighted percentages and 95% confidence intervals (CIs) for characteristics and assessed prevalence ratios (PRs) with predicted marginal means and 95% confidence intervals (CIs) to quantify differences in depression outcomes by key demographic, social, and health factors. Differences were considered significant if $p<0.05$. For HIV stigma, median scores with 95% CIs were reported; meaningful differences between groups were determined based on nonoverlapping CIs. First, we assessed differences in experiencing any depression between groups among all PWH. Next, among PWH with any depression, we assessed differences in experiencing undiagnosed depression, diagnosed depression with symptoms, and diagnosed depression without symptoms between groups. Finally, we assessed differences in the prevalence of undiagnosed depression and diagnosed depression with symptoms, compared with diagnosed depression without symptoms, by selected HIV-related outcomes, substance use, behaviors that carry a risk of HIV transmission, and other mental health factors. All analyses accounted for MMP's complex sample design and weights and were conducted using SAS or SAS-callable SUDAAN survey procedures. Estimates with a coefficient of variation >0.30 were considered unstable and were suppressed.

Results

Overall, 34% of PWH experienced any depression as measured by either PHQ-8 or diagnosis (Figure). An estimated 15% (CI:14–17) had current symptoms of major/other depression and 25% (CI:23–27) had a depression diagnosis (results not reported in tables). Of those with any depression, 26% had current symptoms but no diagnosis (undiagnosed depression), 19% had both diagnosis and current symptoms, and 55% had a diagnosis without current symptoms (Figure).

Factors associated with experiencing any depression

Having any depression symptoms or diagnosis was more common among White and multiracial persons compared with Hispanic/Latino persons (Table 1, PR:1.32 and PR: 1.34, respectively); among cisgender women and transgender persons compared with cisgender men (PR: 1.19 and PR: 1.77, respectively); and among gay, bisexual, and other cisgender

men who have sex with cisgender men (MSM) compared with heterosexual cisgender men (PR:1.32). Disability, poverty, and unstable housing or homelessness were associated with experiencing any depression (PR:2.05, PR:1.36, PR:1.49, respectively). Any depression was more common among those who were unemployed or unable to work compared with those who were employed (PR:1.58 and PR:1.74, respectively). Both lifetime and past year experiences of intimate partner violence and sexual violence were associated with experiencing any depression (PR:1.57 and 1.69, respectively). People with depression were more likely to experience stigma than those without depression (Median score 33, CI:30–37 vs. 28, CI:26–29, results not reported in tables). Depression was more common among those who experienced discrimination in HIV care settings compared with those who did not (PR:1.33).

Factors associated with undiagnosed depression, diagnosed depression with symptoms, and diagnosed depression without symptoms among persons with any depression

Among those with any depression symptoms or diagnosis, persons aged 18–29 (PR:1.82) were more likely than those aged 50 or older to have undiagnosed depression (Table 2). Cisgender men (PR:1.34) and transgender persons (PR:1.77) were more likely than cisgender women to have undiagnosed depression, as were those with a disability (PR:1.52) and food insecurity (PR:1.67) compared with those without. Persons who were unemployed (PR:1.79) were more likely than those who were students, homemakers, or retired to have undiagnosed depression.

Among those with any depression symptoms or diagnosis, having diagnosed depression and experiencing current symptoms was not associated with age, race/ethnicity, or gender (Table 2). Unemployed persons (PR:1.62) and those unable to work (PR:1.97) were more likely than employed persons to have diagnosed depression with symptoms, as were those with a disability (PR:2.78), who experienced housing instability/homelessness (PR:1.37), food insecurity (PR:1.46), or discrimination in HIV care (PR:1.71) compared with those without these experiences.

Among those with any depression symptoms or diagnosis, being diagnosed without symptoms was more common among those reporting no disabilities (PR:1.62) and living in households above the poverty level (PR:1.20), and among the employed compared with unemployed (PR:1.31). Persons not experiencing homelessness or housing instability (PR:1.29), incarceration (PR:1.66), food insecurity (PR:1.60), and discrimination in HIV care settings (PR:1.18) were also more likely to have depression without symptoms.

HIV stigma median scores were higher among the undiagnosed (40.4) and diagnosed with symptoms (43.1) than those diagnosed without symptoms (28.0; Table 2).

HIV-related outcomes, substance use, behaviors that carry a risk of HIV transmission, and other mental health factors among persons experiencing depression

Compared to those with a depression diagnosis but no symptoms, persons with undiagnosed depression were less likely to be prescribed ART (PR:0.76) (Table 3). Those with symptoms (undiagnosed or diagnosed) were less likely than those diagnosed without symptoms to be

ART dose adherent (PR:0.88 and PR:0.73, respectively) or have sustained viral suppression (PR:0.62 and PR:0.91, respectively).

Those with symptoms (undiagnosed or diagnosed) were more likely than those diagnosed without symptoms to smoke cigarettes (PR:1.27 and PR:1.32, respectively). Those diagnosed with symptoms were more likely to use drugs for nonmedical purposes (PR:1.20) than those diagnosed without symptoms. There were no differences in binge drinking among those with depression regardless of diagnosis or symptoms. Persons with undiagnosed depression were more than 2 ½ times as likely as those diagnosed without symptoms to have sex that increases the risk of HIV transmission.

Persons with undiagnosed depression were less likely to be prescribed antidepressants or other psychiatric medications (PR:0.32 and PR:0.48, respectively) than those diagnosed without symptoms. Those who were diagnosed with symptoms were more likely than those diagnosed without symptoms to have an antidepressant prescription (PR:1.27). Persons with undiagnosed depression were less likely to have another psychiatric disorder diagnosis (PR:0.47) than those diagnosed without symptoms. Persons with depression symptoms (undiagnosed or diagnosed) were more likely to report unmet needs for mental health services (PR:2.38 and PR:2.03, respectively) than those diagnosed without symptoms.

Discussion

Depression prevalence is high among U.S. PWH, and close to half of PWH with depression are either undiagnosed or still experiencing current symptoms consistent with major or other depression. Our findings confirm those of others that found disproportionate burden of depression among PWH and insufficient levels of diagnosis and remission.[2,4–8] However, direct comparisons of estimates have not been possible due to differing measures of depression, differences in groups of PWH studied, and varying geographic coverage. This contemporary study adds to the existing estimates in three ways: by focusing on all U.S. PWH regardless of care status, assessing depression based on both current symptoms and clinical diagnosis, and estimating prevalence of missed diagnoses and lack of substantial symptom remission as well as overall burden. Further, we identified which groups of PWH were more likely to be undiagnosed or still experiencing clinically relevant depression symptoms despite diagnosis, in addition to the sociodemographic, behavioral, and care-related factors associated with those statuses.

Our findings confirm that depression disproportionately affects certain groups of PWH more than others, including some populations prioritized for HIV prevention and care efforts such as MSM and transgender persons. Further, consistent with findings from a systematic review,[24] depression was strongly associated with poor social determinants of health (SDOH), including key NHAS QoL indicators such as unstable housing/homelessness, food insecurity, and unemployment.[17] For these reasons, achieving the goals of NHAS and the EHE initiative could be facilitated by attending to the mental health needs of PWH to improve their health and QoL.[19] Integrating mental health care with HIV care can support these efforts.[15,25]

Among PWH experiencing depression, certain factors were associated with being undiagnosed or being diagnosed but still experiencing substantial symptoms. Key populations prioritized for HIV prevention and treatment such as young adults and transgender persons were more likely to be undiagnosed. This may be partially due to lower access to care—and hence reduced opportunities for mental health screening—among these groups.[26–28] We found that people with undiagnosed depression were less likely to be engaged in HIV care compared with people with diagnosed depression without current symptoms consistent with major or other depression. Interventions to increase access to care and educate providers about the importance of mental health screening among these groups may help. Additionally, it is important to ensure that healthcare providers and care facility staff are trained to provide culturally competent care in settings free of stigma, as this can help patients feel more comfortable disclosing mental health symptoms to providers. A national HIV care facility survey found that 1/3 of facilities did not provide training on stigma and 1/3 did not provide training on other areas of cultural competency to all staff interacting with patients.[29] We found that HIV stigma and experiences of discrimination in care were associated with depression, as have others.[30–32] What this study adds is that stigma and discrimination are associated with continuing to experience clinically relevant symptoms among those with depression. Psychotherapy and Interventions that increase protective factors such as resilience and optimism may reduce the association between stigma and depression.[33,34]

This analysis also confirmed that people with poor SDOH, including key NHAS QoL indicators,[17] were more likely to have unrecognized (that is, undiagnosed) depression or to have a depression diagnosis but still be experiencing symptoms of major or other depression. Interventions that address both mental health treatment and social services are needed.[15,24] Persons who are not consistently in care due to unmet social and subsistence needs may become more medically complex and providers may prioritize addressing urgent problems related to physical health over mental health assessment. While the USPSTF has recommended universal screening for depression among all adults, they note that there is little evidence regarding optimal screening intervals.[16] Providers may need more education on the potential benefits of more frequent routine screening among PWH, particularly among those with diagnosed depression, to identify persons who are not receiving adequate treatment. Improvements in workflow—for example, clinical reminders or tasking to clinical support staff—could also help increase depression screening and assessment.

Following screening, initiation of appropriate prescription of antidepressants and referral to mental health care are important next steps for providers. As expected, people with undiagnosed depression were less likely to have an antidepressant prescription than those diagnosed without symptoms of major or other depression. However, those with diagnosed depression with continuing symptoms were more likely to have an antidepressant prescription than those diagnosed without symptoms. This may be because some persons with a depression diagnosis without substantial symptoms may no longer require medications. Antidepressants are an effective intervention for relief of depression symptoms in some patients but results around long-term effectiveness are mixed.[14] With more frequent assessment of those with diagnosed depression, those with a recurrence of clinically significant symptoms can be referred to effective psychological counseling and

treatment if not already receiving these services, such as cognitive behavior therapy or group therapy.[14,35–37] We found that receiving services from a mental health professional was associated with lack of current symptoms among those with a depression diagnosis, supporting the important role that psychosocial interventions also play in treating depression. Further, among persons with depression, those with an unmet need for mental health services were more likely to be undiagnosed or to be experiencing current symptoms despite a depression diagnosis. Reducing unmet need for mental health services among those who need them is a key NHAS QoL indicator that can improve health and well-being among PWH. Ensuring adequate screening and timely delivery of psychosocial and medical treatments for depression among PWH is needed to achieve NHAS QoL goals.

Further, adequately treating depression among PWH may help achieve NHAS and EHE goals for improving viral suppression among PWH and subsequently reducing HIV transmission. Koenig and colleagues estimated that fully diagnosing and adequately treating depression would increase the proportion of PWH with depression who are virally suppressed by 15% over the next decade, supporting national prevention goals and reducing risk of sexual transmission.[38] This analysis confirms that having symptoms (with or without being diagnosed) was associated with worse HIV outcomes such as poorer adherence and lack of viral suppression compared with being diagnosed without symptoms, and undiagnosed depression was associated with behaviors linked to HIV transmission such as sex without the use of any prevention strategy. Enhancing providers' capacity and removing barriers to diagnosing and successfully treating depression can not only benefit PWH but also contribute to national prevention priorities and reductions in HIV transmission.

Limitations of this analysis include that causality cannot be inferred due to MMP's cross sectional design. Second, biases in self-reported and medical record data may have resulted in measurement error, for example social desirability bias may affect responses to the PHQ-8 and information about diagnoses in the medical record could be incomplete. However, to the extent that this was not differential among groups, those comparisons may not be affected. Third, although our PHQ-8 scoring method is consistent with a clinical diagnosis of major/other depression,[22] it is not equivalent and further diagnostic comparison is recommended. However, the PHQ-8 is widely used and validated, and its use in this analysis provides an important snapshot of current clinically significant depression symptoms among a large nationally representative sample of PWH. Fourth, although we were able to assess antidepressant prescriptions from medical records during the look back period of 2 years, they may be prescribed for reasons other than depression, such as smoking cessation, weight loss, or relief of chronic pain. However, our finding that those with undiagnosed depression were less likely than those with diagnosed depression to be prescribed antidepressants provides some evidence that antidepressants were primarily prescribed to treat depression. Fifth, due to the cross-sectional design we were not able to able to assess the timing or duration of depression symptoms and diagnoses. Sixth, although we chose to focus on depression symptoms consistent with a diagnosis of major/other depression, people with diagnosed depression may still experience subclinical levels of depression that can affect their QoL and may benefit from additional treatment. While this was beyond the scope of this analysis, it is an important area for future study. Finally, diagnoses of depression outside of the person's HIV care facility might not be captured by MMP. However, our estimates

of undiagnosed depression still represent lost opportunities for optimal care because it is important for HIV providers to be aware of depression among their patients due to its documented negative effect on QoL, ART adherence, and HIV care engagement.

In conclusion, we found that 1/3 of U.S. PWH experienced depression, of whom nearly half were undiagnosed or still experiencing considerable symptoms. Expanding universal screening and high-quality treatment options for depression could improve QoL and HIV outcomes among PWH.

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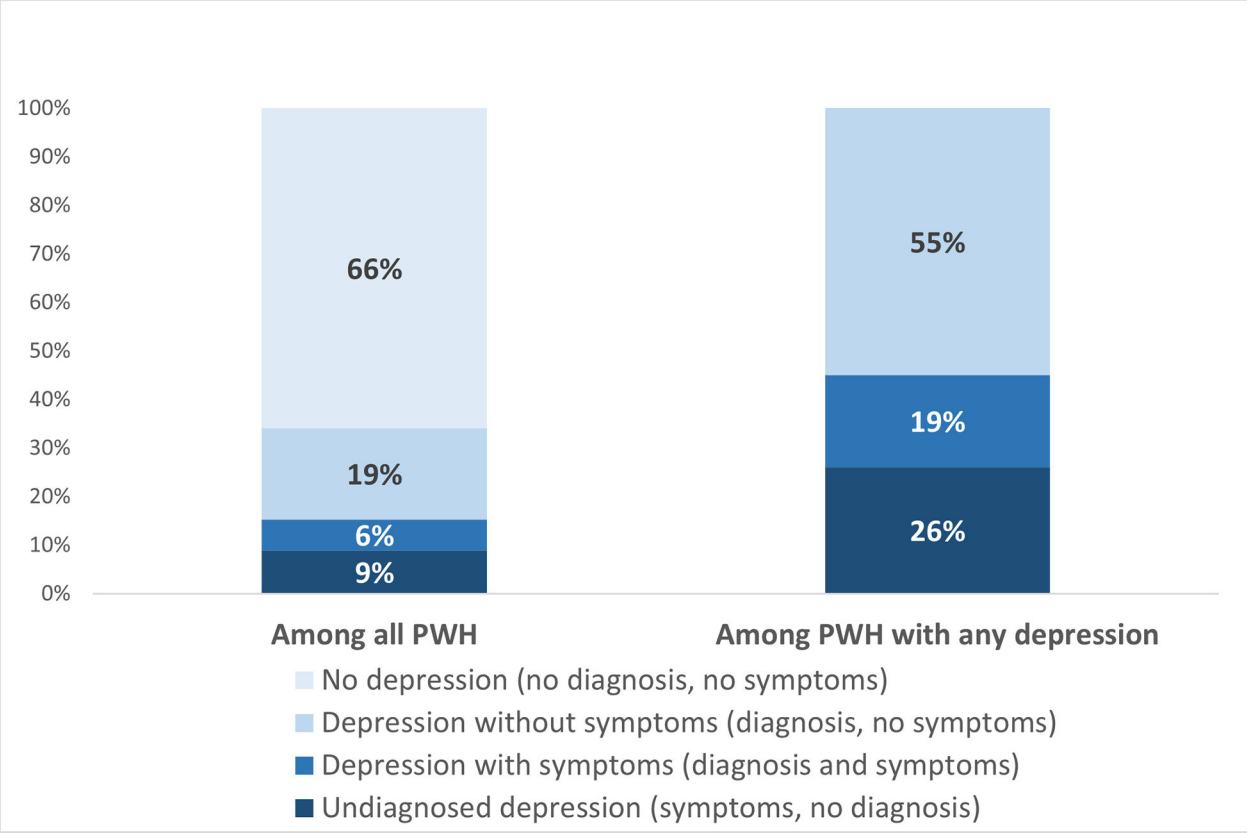

Figure 1.
Depression Among U.S. Adults with HIV (PWH)—Medical Monitoring Project, 2021 Cycle (N=3,995)

Table 1.

Prevalence of depression among U.S. adults with diagnosed HIV by selected characteristics—Medical Monitoring Project, 2021 cycle (N=3995)

	Any depression (current symptoms of major/other depression or depression diagnosis)			
Characteristics	**n**[a]	**Row % (95% CI)**[b]	**Prevalence Ratio (95% CI)**	**p value**
Total	1398	34.1 (32.2–36.0)		
Age (years)				
18–29	91	37.6 (30.2–44.9)	1.14 (0.93–1.41)	0.220
30–39	254	37.4 (33.0–41.7)	1.14 (1.00–1.30)	0.062
40–49	264	33.4 (30.3–36.6)	1.02 (0.90–1.15)	0.768
≥50	789	32.8 (30.4–35.3)	Reference	
Race and ethnicity [c]				
American Indian/Alaska Native	-	-	-	-
Asian	-	-	-	-
Black	509	31.7 (28.5–34.8)	1.03 (0.89–1.20)	0.676
Hispanic or Latino	315	30.7 (27.1–34.3)	Reference	
Native Hawaiian/Other Pacific Islander	-	-	-	-
White	474	40.4 (37.7–43.0)	1.32 (1.14–1.52)	<0.001
Multiracial	80	41.1 (33.8–48.5)	1.34 (1.12–1.61)	0.003
Gender				
Cisgender men	968	32.2 (30.1–34.2)	Reference	
Cisgender women	381	38.2 (34.1–42.3)	1.19 (1.05–1.35)	0.008
Transgender[d]	48	57.0 (46.8–67.2)	1.77 (1.50–2.10)	<0.001
Sexual behavior/orientation [e]				
Gay, Bisexual, and Other Cisgender Men who have sex with cisgender men	722	34.3 (31.6–37.0)	1.32 (1.12–1.56)	0.001
Cisgender men who have sex only with cisgender women	220	25.9 (22.5–29.3)	Reference	
Cisgender women who have sex with cisgender men	364	37.6 (33.3–41.8)	1.45 (1.26–1.67)	<0.001
Others	92	51.0 (41.3–60.8)	1.97 (1.61–2.42)	<0.001
Time since HIV diagnosis				
<5 years	169	35.6 (30.6–40.5)	1.12 (0.92–1.38)	0.267
5–9 years	212	31.7 (27.1–36.2)	Reference	
≥10 years	1014	34.4 (32.3–36.5)	1.09 (0.94–1.26)	0.269
Any disability [f]				
Yes	815	49.1 (45.9–52.3)	2.05 (1.89–2.23)	<0.001
No	581	24.0 (22.1–25.9)	Reference	
Education				
<High school	237	39.5 (32.7–46.3)	1.22 (1.03–1.43)	0.025

	Any depression (current symptoms of major/other depression or depression diagnosis)			
Characteristics	**n**[a]	**Row % (95% CI)**[b]	**Prevalence Ratio (95% CI)**	**p value**
High school diploma or equivalent	371	34.8 (31.1–38.5)	1.07 (0.95–1.22)	0.284
>High school	788	32.5 (30.4–34.6)	Reference	
Healthcare coverage				
Any private insurance	449	27.8 (25.4–30.3)	1.06 (0.82–1.38)	0.654
Public insurance only	842	41.4 (38.3–44.4)	1.58 (1.23–2.02)	<0.001
Ryan White coverage only/Uninsured	88	26.2 (19.5–32.9)	Reference	
Household poverty level [g]				
Above poverty level	693	30.3 (28.2–32.3)	Reference	
At or below poverty level	588	41.0 (36.7–45.4)	1.36 (1.22–1.51)	<0.001
Household annual income [g]				
$0 to $9,999	416	41.8 (35.0–48.6)	1.61 (1.26–2.07)	<0.001
$10,000 to $19,999	313	39.8 (36.3–43.4)	1.54 (1.31–1.81)	<0.001
$20,000 to $49,999	339	30.4 (27.1–33.7)	1.17 (0.99–1.40)	0.071
$50,000+	213	25.9 (22.5–29.2)	Reference	
Country or territory of birth				
Born in United States	1230	36.0 (33.5–38.5)	1.46 (1.20–1.79)	<0.001
Born outside the United States	166	24.6 (20.6–28.6)	Reference	
Unstable housing or homelessness [h]				
Yes	303	47.0 (41.4–52.5)	1.49 (1.33–1.67)	<0.001
No	1093	31.5 (29.9–33.1)	Reference	
Recent incarceration [i]				
Yes	38	43.0 (33.2–52.9)	1.27 (1.02–1.59)	0.048
No	1356	33.8 (31.9–35.7)	Reference	
Hunger/food insecurity [j]				
Yes	316	53.2 (46.2–60.2)	1.74 (1.50–2.02)	<0.001
No	1079	30.6 (28.7–32.5)	Reference	
Employment (current)				
Employed	509	26.7 (23.5–29.9)	Reference	
Unemployed	236	42.3 (38.1–46.5)	1.58 (1.33–1.88)	<0.001
Unable to work	464	46.5 (41.9–51.1)	1.74 (1.49–2.03)	<0.001
Student/homemaker/retired	189	29.5 (25.8–33.3)	1.10 (0.92–1.33)	0.299
Lifetime intimate partner violence [k]				
Yes	511	46.2 (42.5–49.8)	1.57 (1.44–1.72)	<0.001
No	868	29.3 (27.6–31.1)	Reference	
Last year intimate partner violence [k]				
Yes	89	55.7 (46.1–65.2)	1.69 (1.43–1.99)	<0.001

	Any depression (current symptoms of major/other depression or depression diagnosis)			
Characteristics	**n**[a]	**Row % (95% CI)**[b]	**Prevalence Ratio (95% CI)**	**p value**
No	1288	33.0 (31.1–34.8)	Reference	
Lifetime sexual violence [l]				
Yes	347	53.1 (48.9–57.3)	1.77 (1.62–1.93)	<0.001
No	1014	30.1 (28.3–31.8)	Reference	
Last year sexual violence [l]				
Yes	28	66.6 (50.7–82.5)	1.99 (1.56–2.54)	<0.001
No	1332	33.4 (31.4–35.4)	Reference	
Any discrimination in HIV care setting [m]				
Yes	364	42.7 (38.9–46.4)	1.33 (1.22–1.46)	<0.001
No	936	32.0 (29.7–34.3)	Reference	

Notes: HIV, human immunodeficiency virus; CI, confidence interval; all variables measured by self-report over the past 12 months except where otherwise noted; estimates with a coefficient of variation > 0.30 were suppressed; the reference group was determined based on the category with the lowest prevalence of the outcome of interest.

[a] Numbers are unweighted.

[b] Percentages and corresponding CIs are weighted percentages.

[c] Hispanic/Latino persons could be of any race, other groups are non-Hispanic/Latino.

[d] Persons were classified as transgender if sex at birth and gender reported by the person were different, or if the person chose “transgender” in response to the question about self-identified gender.

[e] Persons were classified based on sexual behavior among the sexually active and reported sexual orientation among the non-sexually active.

[f] Includes self-assessed physical, mental, and emotional disabilities.

[g] Based on income from all sources, before taxes, in the last calendar year. Poverty guidelines as defined by HHS; the 2020 guidelines were used for persons interviewed in 2021 and the 2021 guidelines were used for persons interviewed in 2022. More information regarding HHS poverty guidelines can be found at https://aspe.hhs.gov/frequently-asked-questions-related-poverty-guidelines-and-poverty.

[h] Experiencing unstable housing (i.e., moving 2 or more times, being evicted, or moving in with others due to financial problems) or homelessness (i.e., living on the street, in a shelter, in a single-room–occupancy hotel, or in a car).

[i] Incarcerated >24 hours.

[j] Going without food due to lack of money.

[k] Slapped, punched, shoved, kicked, choked or otherwise physically hurt by a romantic or sexual partner.

[l] Threatened with harm or physically forced to have unwanted vaginal, anal, or oral sex.

[m] Being treated with less courtesy or respect than others; receiving poorer service than others; having a doctor or nurse act as if they believed you were not smart, were afraid of you, or as if they were better than you; or feeling like a doctor or nurse was not listening to what you were saying.

Table 2.

Factors associated with undiagnosed depression, diagnosed depression with symptoms, and diagnosed depression without symptoms among U.S. adults with diagnosed HIV with any depression—Medical Monitoring Project, 2021 cycle (N=1398)

	Undiagnosed depression (current symptoms of major/other depression without depression diagnosis)				Diagnosed depression with symptoms (current symptoms of major/other depression with depression diagnosis)				Diagnosed depression without symptoms (no current symptoms of major/other depression with depression diagnosis)			
Characteristics	**n**[a]	**Row % (95% CI)**[b]	**Prevalence Ratio (95% CI)**	**p value**	**n**[a]	**Row % (95% CI)**[b]	**Prevalence Ratio (95% CI)**	**p value**	**n**[a]	**Row % (95% CI)**[b]	**Prevalence Ratio (95% CI)**	**p value**
Total	331	26.1 (22.5–29.6)			282	18.9 (16.3–21.4)			785	55.0 (51.4–58.7)		
Age (years)												
18–29	37	40.2 (25.4–55.0)	1.82 (1.21–2.73)	0.010	-	-	-	-	46	51.9 (38.4–65.3)	Reference	
30–39	65	27.3 (20.5–34.1)	1.24 (0.95–1.61)	0.125	51	19.3 (14.1–24.5)	1.10 (0.79–1.53)	0.587	138	53.4 (47.2–59.5)	1.03 (0.78–1.35)	0.833
40–49	70	29.7 (22.7–36.8)	1.35 (1.03–1.75)	0.031	54	17.6 (13.8–21.4)	Reference		140	52.7 (45.7–59.6)	1.02 (0.77–1.33)	0.912
≥50	159	22.1 (18.2–26.0)	Reference		169	20.9 (17.2–24.6)	1.19 (0.88–1.59)	0.258	461	57.0 (52.1–62.0)	1.10 (0.86–1.41)	0.436
Race and ethnicity [c]												
American Indian/ Alaska Native	-	-	-	-	-	-	-	-	-	-	-	-
Asian	-	-	-	-	-	-	-	-	-	-	-	-
Black	122	25.2 (21.4–29.1)	1.10 (0.87–1.39)	0.408	94	18.1 (14.4–21.8)	0.99 (0.69–1.42)	0.941	293	56.7 (51.3–62.0)	1.10 (0.87–1.39)	0.409
Hispanic or Latino	88	30.1 (21.5–38.8)	1.32 (0.96–1.80)	0.095	68	18.3 (13.6–23.1)	Reference		159	51.5 (41.5–61.5)	Reference	
Native Hawaiian/Other Pacific Islander	-	-	-	-	-	-	-	-	-	-	-	-
White	89	22.9 (18.5–27.2)	Reference		104	20.9 (17.1–24.7)	1.14 (0.81–1.60)	0.452	281	56.2 (51.8–60.7)	1.09 (0.89–1.34)	0.391
Multiracial	22	29.4 (17.7–41.0)	1.28 (0.88–1.87)	0.210	13	16.1 (9.9–22.3)	0.88 (0.52–1.47)	0.618	45	54.5 (44.5–64.6)	1.06 (0.81–1.38)	0.672
Gender												
Cisgender men	239	27.5 (23.3–31.8)	1.34 (1.04–1.72)	0.022	191	18.3 (15.4–21.1)	Reference		538	54.2 (50.8–57.6)	1.13 (0.88–1.45)	0.314

	Undiagnosed depression (current symptoms of major/other depression without depression diagnosis)				Diagnosed depression with symptoms (current symptoms of major/other depression with depression diagnosis)				Diagnosed depression without symptoms (no current symptoms of major/other depression with depression diagnosis)			
Characteristics	**n**[a]	**Row % (95% CI)**[b]	**Prevalence Ratio (95% CI)**	**p value**	**n**[a]	**Row % (95% CI)**[b]	**Prevalence Ratio (95% CI)**	**p value**	**n**[a]	**Row % (95% CI)**[b]	**Prevalence Ratio (95% CI)**	**p value**
Cisgender women	76	20.6 (15.5–25.7)	Reference		83	21.2 (15.8–26.5)	1.16 (0.87–1.55)	0.325	222	58.2 (51.0–65.5)	1.21 (0.94–1.56)	0.110
Transgender[d]	16	36.5 (22.0–51.0)	1.77 (1.07–2.91)	0.036	-	-	-	-	24	48.0 (36.3–59.7)	Reference	
Sexual behavior/ orientation [e]												
Gay, bisexual, and other cisgender men who have sex with cisgender men	171	26.8 (22.6–31.1)	1.28 (0.96–1.70)	0.092	142	18.1 (14.7–21.5)	0.96 (0.68–1.33)	0.788	409	55.1 (51.5–58.6)	1.04 (0.89–1.22)	0.632
Cisgender men who only have sex with cisgender women	62	28.0 (21.9–34.1)	1.33 (1.02–1.74)	0.032	42	19.0 (14.0–24.0)	Reference		116	53.0 (45.5–60.5)	Reference	
Cisgender women who have sex with cisgender men	74	21.0 (15.4–26.6)	Reference		79	21.2 (15.7–26.7)	1.12 (0.80–1.55)	0.515	211	57.8 (50.3–65.3)	1.09 (0.93–1.27)	0.271
Others	24	33.1 (19.1–47.0)	1.57 (0.96–2.58)	0.089	19	16.7 (6.9–26.5)	0.88 (0.49–1.58)	0.671	49	50.2 (38.1–62.3)	0.95 (0.75–1.20)	0.650
Time since HIV diagnosis												
<5 years	57	33.8 (25.3–42.3)	1.37 (1.00–1.88)	0.058	27	15.5 (9.0–22.0)	Reference		85	50.7 (39.7–61.7)	Reference	
5–9 years	48	25.6 (17.2–34.1)	1.04 (0.75–1.44)	0.816	48	22.5 (17.5–27.4)	1.45 (0.90–2.32)	0.115	116	51.9 (42.4–61.4)	1.02 (0.78–1.34)	0.867
≥10 years	225	24.7 (20.6–28.8)	Reference		207	18.8 (15.9–21.7)	1.21 (0.79–1.86)	0.374	582	56.6 (52.5–60.6)	1.12 (0.88–1.42)	0.350
Any disability [f]												
Yes	218	30.4 (26.8–34.1)	1.52 (1.19–1.94)	<0.001	219	25.8 (21.7–29.9)	2.78 (2.13–3.64)	<0.001	378	43.8 (39.6–47.9)	Reference	
No	113	20.0 (14.8–25.3)	Reference		63	9.3 (7.5–11.0)	Reference		405	70.7 (64.8–76.6)	1.62 (1.43–1.82)	<0.001
Education												
<High school	64	29.2 (22.5–35.9)	1.20 (0.93–1.54)	0.163	51	20.2 (14.8–25.6)	1.10 (0.78–1.56)	0.576	122	50.6 (43.3–57.9)	Reference	

Characteristics	Undiagnosed depression (current symptoms of major/other depression without depression diagnosis)				Diagnosed depression with symptoms (current symptoms of major/other depression with depression diagnosis)				Diagnosed depression without symptoms (no current symptoms of major/other depression with depression diagnosis)			
	n[a]	Row % (95% CI)[b]	Prevalence Ratio (95% CI)	p value	n[a]	Row % (95% CI)[b]	Prevalence Ratio (95% CI)	p value	n[a]	Row % (95% CI)[b]	Prevalence Ratio (95% CI)	p value
High school diploma or equivalent	94	27.9 (22.8–33.0)	1.15 (0.86–1.53)	0.348	80	19.3 (14.8–23.9)	1.06 (0.76–1.47)	0.744	197	52.7 (47.3–58.1)	1.04 (0.89–1.22)	0.599
>High school	173	24.3 (19.4–29.2)	Reference		151	18.3 (14.5–22.1)	Reference		464	57.3 (53.2–61.5)	1.13 (0.99–1.30)	0.059
Healthcare coverage												
Any private insurance	111	28.7 (21.4–36.1)	1.20 (0.91–1.58)	0.210	67	13.0 (10.0–16.0)	Reference		271	58.2 (50.7–65.7)	1.16 (0.89–1.52)	0.249
Public insurance only	188	24.0 (20.4–27.6)	Reference		192	21.8 (18.7–25.0)	1.67 (1.31–2.14)	<0.001	462	54.2 (49.6–58.8)	1.08 (0.82–1.43)	0.567
Ryan White coverage only/Uninsured	26	30.2 (17.0–43.4)	1.26 (0.79–2.00)	0.347	17	19.7 (11.3–28.1)	1.51 (0.95–2.40)	0.089	45	50.1 (36.9–63.2)	Reference	
Household poverty level [g]												
Above poverty level	142	24.3 (19.6–28.9)	Reference		123	15.9 (13.0–18.8)	Reference		428	59.8 (55.6–64.1)	1.20 (1.06–1.36)	0.003
At or below poverty level	149	26.7 (22.0–31.4)	1.10 (0.88–1.37)	0.393	137	23.4 (19.4–27.3)	1.47 (1.20–1.81)	<0.001	302	49.9 (44.2–55.6)	Reference	
Household income [g]												
$0 to $9,999	111	27.2 (22.1–32.3)	1.32 (0.98–1.77)	0.060	96	23.1 (18.4–27.8)	2.65 (1.82–3.85)	<0.001	209	49.7 (42.7–56.7)	Reference	
$10,000 to $19,999	53	20.6 (14.5–26.7)	Reference		77	24.6 (18.4–30.8)	2.81 (1.95–4.05)	<0.001	183	54.8 (48.8–60.8)	1.10 (0.95–1.27)	0.177
$20,000 to $49,999	83	27.8 (22.5–33.0)	1.35 (1.01–1.80)	0.040	64	16.6 (13.3–19.8)	1.89 (1.32–2.72)	<0.001	192	55.7 (50.4–60.9)	1.12 (0.95–1.31)	0.155
$50,000+	44	24.9 (17.4–32.4)	1.21 (0.84–1.73)	0.303	23	8.7 (6.2–11.3)	Reference		146	66.4 (59.4–73.3)	1.34 (1.11–1.60)	0.002
Country or territory of birth												
Born in United States	279	25.8 (22.2–29.4)	Reference		252	19.2 (16.5–21.9)	1.15 (0.80–1.64)	0.454	699	55.0 (51.2–58.7)	Reference	
Born in Foreign Country	50	27.2 (18.7–35.8)	1.05 (0.78–1.43)	0.736	30	16.8 (10.8–22.7)	Reference		86	56.0 (47.4–64.6)	1.02 (0.87–1.19)	0.814

Characteristics	Undiagnosed depression (current symptoms of major/other depression without depression diagnosis)				Diagnosed depression with symptoms (current symptoms of major/other depression with depression diagnosis)				Diagnosed depression without symptoms (no current symptoms of major/other depression with depression diagnosis)			
	n[a]	Row % (95% CI)[b]	Prevalence Ratio (95% CI)	p value	n[a]	Row % (95% CI)[b]	Prevalence Ratio (95% CI)	p value	n[a]	Row % (95% CI)[b]	Prevalence Ratio (95% CI)	p value
Unstable housing or homelessness [h]												
Yes	85	31.2 (23.4–39.0)	1.27 (0.98–1.64)	0.077	76	23.8 (17.6–29.9)	1.37 (1.06–1.77)	0.022	142	45.0 (38.4–51.7)	Reference	
No	246	24.6 (21.1–28.0)	Reference		205	17.4 (14.9–19.8)	Reference		642	58.1 (54.5–61.6)	1.29 (1.13–1.47)	<0.001
Recent incarceration [i]												
Yes	10	39.5 (17.5–61.4)	1.55 (0.92–2.60)	0.145	-	-	-	-	17	33.6 (20.0–47.2)	Reference	
No	319	25.5 (22.2–28.8)	Reference		270	18.6 (16.1–21.1)	Reference		767	55.9 (52.1–59.6)	1.66 (1.11–2.49)	0.003
Hunger/food insecurity [j]												
Yes	105	37.4 (31.2–43.5)	1.67 (1.37–2.03)	<0.001	82	24.8 (18.4–31.3)	1.46 (1.12–1.90)	0.007	129	37.8 (31.6–44.0)	Reference	
No	225	22.4 (18.9–25.9)	Reference		200	17.0 (14.6–19.4)	Reference		654	60.6 (56.6–64.5)	1.60 (1.36–1.89)	<0.001
Employment (current)												
Employed	127	26.6 (21.4–31.8)	1.45 (0.96–2.19)	0.074	73	13.0 (10.4–15.6)	Reference		309	60.4 (54.4–66.5)	1.31 (1.07–1.62)	0.006
Unemployed	69	33.0 (24.7–41.2)	1.79 (1.15–2.80)	0.009	54	21.1 (14.8–27.3)	1.62 (1.11–2.38)	0.014	113	46.0 (37.5–54.5)	Reference	
Unable to work	100	24.6 (20.5–28.7)	1.34 (0.90–2.00)	0.141	120	25.6 (20.4–30.8)	1.97 (1.48–2.64)	<0.001	244	49.8 (43.7–55.9)	1.08 (0.87–1.34)	0.462
Student/homemaker/ retired	35	18.4 (11.5–25.2)	Reference		35	15.4 (9.6–21.1)	1.18 (0.74–1.91)	0.488	119	66.3 (59.3–73.2)	1.44 (1.20–1.74)	<0.001
Lifetime intimate partner violence [k]												
Yes	118	26.8 (21.3–32.4)	1.05 (0.83–1.32)	0.685	125	22.7 (16.9–28.4)	1.39 (1.04–1.88)	0.033	268	50.5 (44.7–56.3)	Reference	
No	205	25.6 (21.6–29.5)	Reference		153	16.3 (14.0–18.5)	Reference		510	58.2 (54.4–62.0)	1.15 (1.03–1.28)	0.007

Characteristics	Undiagnosed depression (current symptoms of major/other depression without depression diagnosis)				Diagnosed depression with symptoms (current symptoms of major/other depression with depression diagnosis)				Diagnosed depression without symptoms (no current symptoms of major/other depression with depression diagnosis)			
	n[a]	Row % (95% CI)[b]	Prevalence Ratio (95% CI)	p value	n[a]	Row % (95% CI)[b]	Prevalence Ratio (95% CI)	p value	n[a]	Row % (95% CI)[b]	Prevalence Ratio (95% CI)	p value
Lifetime sexual violence [l]												
Yes	86	30.1 (21.7–38.5)	1.21 (0.89–1.65)	0.234	90	23.0 (16.1–29.8)	1.34 (0.95–1.89)	0.108	171	46.9 (41.5–52.3)	Reference	
No	234	24.8 (21.0–28.6)	Reference		183	17.2 (14.6–19.9)	Reference		597	58.0 (53.5–62.4)	1.23 (1.09–1.40)	0.001
Any discrimination in HIV care setting [m]												
Yes	91	23.6 (17.5–29.7)	Reference		94	26.3 (20.7–32.0)	1.71 (1.30–2.23)	<0.001	179	50.0 (44.2–55.8)	Reference	
No	213	25.3 (22.3–28.4)	1.07 (0.83–1.39)	0.595	162	15.4 (13.2–17.7)	Reference		561	59.2 (55.6–62.8)	1.18 (1.05–1.34)	0.004
Stigma summary score [n]												
Median (95% CI)	306	40.4 (34.6–46.2)	-	-	263	43.1 (36.2–50.0)	-	-	747	28.0 (26.1–30.0)	-	-

Notes: HIV, human immunodeficiency virus; CI, confidence interval; all variables measured by self-report over the past 12 months except where otherwise noted; estimates with a coefficient of variation > 0.30 were suppressed; the reference group was determined based on the category with the lowest prevalence of the outcome of interest.

[a]Numbers are unweighted.

[b]Percentages and corresponding CIs are weighted percentages.

[c]Hispanic/Latino persons could be of any race, other groups are non-Hispanic/Latino.

[d]Persons were classified as transgender if sex at birth and gender reported by the person were different, or if the person chose “transgender” in response to the question about self-identified gender.

[e]Persons were classified based on sexual behavior among the sexually active and reported sexual orientation among the non-sexually active.

[f]Includes self-assessed physical, mental, and emotional disabilities.

[g]Based on income from all sources, before taxes, in the last calendar year. Poverty guidelines as defined by HHS; the 2020 guidelines were used for persons interviewed in 2021 and the 2021 guidelines were used for persons interviewed in 2022. More information regarding HHS poverty guidelines can be found at https://aspe.hhs.gov/frequently-asked-questions-related-poverty-guidelines-and-poverty.

[h]Experiencing unstable housing (i.e., moving 2 or more times, being evicted, or moving in with others due to financial problems) or homelessness (i.e., living on the street, in a shelter, in a single-room–occupancy hotel, or in a car).

[i] Incarcerated >24 hours.

[j] Going without food due to lack of money.

[k] Slapped, punched, shoved, kicked, choked, or otherwise physically hurt by a romantic or sexual partner.

[l] Threatened with harm or physically forced to have unwanted vaginal, anal, or oral sex.

[m] Being treated with less courtesy or respect than others; receiving poorer service than others; having a doctor or nurse act as if they believed you were not smart, were afraid of you, or as if they were better than you; or feeling like a doctor or nurse was not listening to what you were saying.

[n] Weighted median score on a 10-item scale ranging from 0 (no stigma) to 100 (high stigma) that measures 4 dimensions of HIV stigma: personalized stigma during the past 12 months, current disclosure concerns, current negative self-image, and current perceived public attitudes about people living with HIV.

Table 3.

Associations between depression and clinical and behavioral characteristics among U.S. adults with diagnosed HIV—Medical Monitoring Project, 2021 data collection cycle (N=3995)

Characteristics	Undiagnosed depression (current symptoms of major/other depression without depression diagnosis)		Diagnosed depression with symptoms (current symptoms of major/ other depression with depression diagnosis)		Diagnosed depression without symptoms (no current symptoms of major/other depression with depression diagnosis)		Prevalence Ratio comparing undiagnosed depression with diagnosed depression without symptoms (95% CI)	p value	Prevalence Ratio comparing diagnosed depression with symptoms with diagnosed depression without symptoms (95% CI)	p value
	n[a]	Column % (95% CI)[b]	n[a]	Column % (95% CI)[b]	n[a]	Column % (95% CI)[b]				
ART prescription [c]	254	69.2 (62.7–75.6)	260	91.9 (88.2–95.6)	731	91.4 (88.6–94.1)	0.76 (0.69–0.83)	<0.001	1.01 (0.96–1.05)	0.780
100% ART dose adherence, past 30 days [d]	162	54.4 (48.3–60.5)	125	45.1 (37.7–52.4)	473	62.0 (58.2–65.8)	0.88 (0.78–0.98)	0.015	0.73 (0.60–0.89)	0.001
Sustained viral suppression, all HIV viral load measurements documented undetectable or <200 copies/mL [c]	183	46.0 (39.3–52.6)	202	67.2 (60.3–74.1)	596	73.9 (68.3–79.5)	0.62 (0.54–0.72)	<0.001	0.91 (0.82–1.00)	0.050
HIV care engagment[c,e]	216	62.9 (56.3–69.5)	228	75.5 (68.6–82.4)	662	81.1 (78.0–84.2)	0.78 (0.70–0.85)	<0.001	0.93 (0.85–1.01)	0.069
Missed HIV care visits	87	25.4 (20.9–30.0)	85	31.2 (25.2–37.1)	152	20.4 (16.3–24.5)	1.25 (1.00–1.57)	0.054	1.53 (1.15–2.04)	0.004
Emergency room visits										
0	170	50.0 (41.0–59.1)	137	47.4 (40.3–54.4)	440	56.0 (51.8–60.2)	0.89 (0.75–1.06)	0.174	0.85 (0.71–1.01)	0.048
1	69	20.1 (14.0–26.2)	43	14.9 (11.2–18.7)	146	18.2 (15.0–21.3)	1.11 (0.78–1.57)	0.569	0.82 (0.59–1.14)	0.235
2–4	69	21.5 (16.0–27.1)	70	25.9 (20.5–31.3)	154	20.0 (15.9–24.1)	1.08 (0.79–1.47)	0.647	1.30 (0.98–1.72)	0.075
5+	-	-	30	11.7 (8.1–15.4)	44	5.8 (3.5–8.1)	-	-	2.02 (1.28–3.18)	0.003
Hospitalizations										
0	252	73.2 (66.0–80.3)	202	72.7 (66.0–79.5)	613	78.5 (75.3–81.7)	0.93 (0.85–1.02)	0.090	0.93 (0.84–1.03)	0.124
1	39	14.4 (8.4–20.4)	33	10.7 (7.6–13.7)	93	11.6 (9.4–13.8)	1.24 (0.80–1.94)	0.343	0.92 (0.65–1.31)	0.651
2+	39	12.4 (6.6–18.3)	46	16.6 (10.9–22.2)	78	9.9 (7.4–12.5)	1.25 (0.82–1.92)	0.305	1.67 (1.06–2.63)	0.029
Cigarette smoking, current	133	42.1 (35.2–48.9)	116	43.5 (37.5–49.5)	261	33.1 (27.9–38.3)	1.27 (1.04–1.56)	0.021	1.32 (1.10–1.58)	0.003
Noninjection drug use [f]	190	61.5 (54.4–68.6)	168	64.2 (58.3–70.1)	421	53.4 (47.8–58.9)	1.15 (1.00–1.33)	0.062	1.20 (1.09–1.33)	<0.001
Injection drug use [g]	15	6.8 (2.9–10.7)	-	-	30	3.7 (2.1–5.4)	1.82 (0.83–3.98)	0.135	-	-

Characteristics	Undiagnosed depression (current symptoms of major/other depression without depression diagnosis)		Diagnosed depression with symptoms (current symptoms of major/ other depression with depression diagnosis)		Diagnosed depression without symptoms (no current symptoms of major/other depression with depression diagnosis)		Prevalence Ratio comparing undiagnosed depression with diagnosed depression without symptoms (95% CI)	p value	Prevalence Ratio comparing diagnosed depression with symptoms with diagnosed depression without symptoms (95% CI)	p value
	n[a]	Column % (95% CI)[b]	n[a]	Column % (95% CI)[b]	n[a]	Column % (95% CI)[b]				
Any noninjection or injection drug use[f,g]	190	61.5 (54.4–68.6)	168	64.2 (58.3–70.1)	422	53.5 (47.9–59.1)	1.15 (0.99–1.33)	0.068	1.20 (1.08–1.33)	<0.001
Binge drinking, past 30 days [h]	68	19.3 (14.9–23.6)	55	20.2 (14.0–26.5)	114	15.0 (11.9–18.1)	1.28 (0.97–1.70)	0.083	1.35 (0.95–1.91)	0.097
Sex that increases the risk of HIV transmission [i]	39	17.0 (11.5–22.5)	-	-	46	6.4 (3.7–9.1)	2.64 (1.48–4.70)	0.001	-	-
Antidepressant prescription[c,j]	45	13.4 (9.0–17.7)	148	52.5 (45.7–59.4)	328	41.3 (37.6–45.0)	0.32 (0.23–0.45)	<0.001	1.27 (1.08–1.50)	0.007
Other psychiatric medication prescription[c,k]	57	17.9 (12.3–23.4)	126	44.3 (37.8–50.9)	301	37.0 (31.5–42.5)	0.48 (0.35–0.66)	<0.001	1.20 (0.94–1.53)	0.145
Diagnosed anxiety[c,l]	39	13.2 (8.9–17.5)	107	36.6 (30.4–42.7)	293	36.7 (32.4–41.1)	0.36 (0.25–0.52)	<0.001	1.00 (0.81–1.22)	0.964
Diagnosed other (nonspecific mood disorder)[c,m]	-	-	-	-	27	3.9 (2.4–5.3)	-	-	-	-
Diagnosed other psychiatric disorder (excluding mood disorders)[c,n]	58	18.3 (11.7–25.0)	113	39.5 (32.7–46.2)	266	33.6 (29.8–37.5)	0.54 (0.38–0.79)	0.001	1.17 (0.94–1.46)	0.157
Any other psychiatric diagnosis in medical record (anxiety, other mood disorder, other psychiatric diagnosis)[c,o]	85	26.3 (18.4–34.3)	177	61.0 (55.1–66.8)	445	56.5 (52.6–60.3)	0.47 (0.34–0.64)	<0.001	1.08 (0.96–1.22)	0.228
Services from a mental health professional										
Received services from a mental health professional	123	34.4 (24.9–44.0)	167	58.4 (53.4–63.4)	364	44.6 (40.2–49.1)	0.77 (0.61–0.97)	0.017	1.31 (1.17–1.47)	<0.001
Unmet need for services from a mental health professional	74	25.5 (18.3–32.6)	59	21.7 (16.4–27.0)	84	10.7 (8.3–13.1)	2.38 (1.62–3.51)	<0.001	2.03 (1.45–2.83)	<0.001
No receipt or need for services from a mental health professional	129	40.1 (33.3–46.9)	54	19.9 (14.1–25.7)	333	44.7 (39.7–49.7)	0.90 (0.76–1.06)	0.202	0.45 (0.32–0.61)	<0.001
Unmet need for services from a mental health professional among those with any need	74	42.5 (29.9–55.1)	59	27.1 (21.4–32.8)	84	19.3 (15.5–23.2)	2.20 (1.56–3.10)	<0.001	1.40 (1.07–1.83)	0.015

Notes: HIV, human immunodeficiency virus; CI, confidence interval; all variables measured by self-report over the past 12 months except where otherwise noted; estimates with a coefficient of variation > 0.30 were suppressed.

[a]Numbers are unweighted.

[b]Percentages and corresponding CIs are weighted percentages.

[c]Measured by medical record abstraction.

[d]Took all prescribed ART doses in the past 30 days, among those taking ART.

[e]Received at least two elements of outpatient HIV care at least 90 days apart. Receipt of outpatient HIV care was measured through medical record abstraction and defined as any documentation of the following: encounter with an HIV care provider (could also be self-reported), viral load test result, CD4 test result, HIV resistance test or tropism assay, ART prescription, PCP prophylaxis, or MAC prophylaxis.

[f]Nonmedical use of marijuana, crack, cocaine, methamphetamines, club drugs, poppers, heroin, opium, prescription of pain relievers or tranquilizers.

[g]Nonmedical injection of cocaine, heroin, methamphetamines, or painkillers.

[h]Persons who drank ≥5 alcoholic beverages in a single sitting (≥4 for women) during the past 30 days.

[i]Vaginal or anal sex with at least 1 partner with an HIV-negative or unknown status while not having sustained viral suppression (defined as having all HIV viral loads being undetectable or < 200 copies/mL, as documented in the medical record in the past 12 months before interview), a condom was not used, and the partner was not on PrEP. PrEP use was only measured among the 5 most recent partners.

[j]Medications licensed by the FDA for the treatment of depressive disorders, including disruptive mood dysregulation disorder, major depressive disorder, single and recurrent episodes persistent depressive disorder (dysthymia), bipolar disorder, premenstrual dysphoric disorder, substance/medication-induced depressive disorder, depressive disorder due to another medical condition, other specified depressive disorder, unspecified depressive disorder.

[k]Medications licensed by the FDA for the treatment of disorders other than depression, including anxiety disorders, obsessive-compulsive disorders, schizophrenia and other psychotic disorders, neurodevelopmental disorder, sleep disorders, trauma- and stressor-related disorders, and substance-related disorders.

[l]Includes includes anxiety disorders, obsessive-compulsive disorders, schizophrenia and other psychotic disorders, neurodevelopmental disorders, sleep disorders, trauma- and stressor-related disorders, and substance-related disorders.

[m]Includes separation anxiety disorder, selective mutism, specific phobia social anxiety disorder (social phobia, panic disorder, agoraphobia generalized anxiety disorder, substance/medication-induced anxiety disorder, anxiety disorder due to another medical condition, unspecified anxiety disorder.

[n]Includes mood disorder diagnoses without mention of depression or anxiety.

[o]Includes obsessive-compulsive disorders, schizophrenia and other psychotic disorders, neurodevelopmental disorders, sleep disorders, trauma- and stressor-related disorders, and substance-related disorders (excluding depression or anxiety).