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Routine Screening for Depression: Identifying a Challenge for Successful HIV Care

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Abstract

Individuals with HIV experience fluctuating levels of distress throughout the course of HIV infection. This study was conducted to examine the associations of depressive symptomatology with HIV disease in a cohort of individuals who are engaged in routine medical care. This cross-sectional study examined the prevalence of depressive symptoms that were measured as part of a standard of care behavioral assessment among individuals at an urban HIV clinic in the Midwest. Demographic characteristics, depressive symptoms, and behavioral risk factors were collected. A total of 514 individuals participated in the study, the majority of whom was male and African American. One quarter of the sample endorsed symptoms of other depressive disorder, while 18% ($n = 91$) endorsed symptoms of major depressive disorder as measured by the Patient Health Questionnaire-9 (PHQ-9). Among those on highly active antiretroviral therapy (HAART), individuals who were unemployed (adjusted odds ratio [AOR] = 2.47, 95% confidence interval [CI] = 1.54, 3.97), had a minor dependent (AOR = 2.17, 95% CI = 1.25, 3.77), or between the ages of 18 and 34 years (AOR = 1.37, CI = 1.03, 1.94) and detectable HIV viral load (AOR = 2.52, 95% CI = 1.22, 5.23) were more likely to report depressive disorder symptoms when controlling for age, gender, race, and education. Nearly 15% of the sample endorsed having suicidal thoughts at least once in the past two weeks. Regardless of HAART prescription, individuals who were unemployed had a higher likelihood of expressing suicidal ideation (AOR = 3.43, 95% CI = 1.66, 7.06). Given the association between depressive symptomatology and poor rates of HIV viral suppression, screening and appropriate interventions for depressive symptoms are warranted in the HIV outpatient setting to improve outcomes.

Introduction

Significant advances have been made toward improving the efficacy and availability of medical treatments for HIV disease.[1] As individuals are living longer with HIV infection, quality of life issues and secondary prevention efforts have been increasingly incorporated into comprehensive care practices.[2] It is well documented that individuals with HIV have significantly higher levels of psychological distress than the general population and are impacted by fluctuating levels of distress throughout the course of HIV infection.[3–6] During periods of distress, individuals with a chronic illness not only have lower quality of life, but also have more difficulty engaging in behaviors that are health promoting.[7–9] There has been little documented that examined the effect highly active antiretroviral therapy (HAART) on depression among individuals with HIV. Having a better understanding of the relationship between HAART and depression will enhance provision of care.

Depression has been documented as the most common form of psychological distress experienced by individuals with HIV/AIDS.[4–7,8,10] The impact of depression on immune function is not well defined, yet significant negative associations have been reported regarding increased risk for substance use disorders, inconsistent use of condoms, nonadherence to HAART and routine medical care.[9–16] African Americans and women have been identified as groups who often have unrecognized or untreated depressive symptoms that may impact HIV-related health outcomes.[17–22] Individual interventions have been developed to address these negative mood disorders among HIV-infected populations and have been shown to be successful.[23]

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As a result of the established relationship between HIV disease and depressive disorders, screening for depressive symptoms has been recommended as a component of routine HIV medical care.[2,24] Unfortunately, consistent screening among patients who present for care has been difficult to establish in many care-providing environments. This study was conducted to assess the prevalence of symptoms of depressive disorders and understand their associations to HIV-related health outcomes among an urban cohort of individuals with HIV receiving medical care.

Methods

This cross-sectional study examined rates of depressive symptoms measured in a behavioral assessment, which was conducted as part of standard of care among HIV-infected patients in an urban, Midwestern university HIV clinic. All patients with HIV who presented at the clinic between June and September 2007 were eligible to complete assessments that were conducted as part of their clinic visit. This study was approved by Washington University School of Medicine Human Research Protection Office.

Demographic characteristics (race, age, employment, education, income, and gender), depressive symptoms, and behavioral risk factors (current sexual and drug-using behaviors) were collected. The Patient Health Questionnaire (PHQ-9) was used to measure depressive symptomatology, severity of depressive symptoms, and calculate symptom counts that signify major depressive disorder and other depressive disorders. Each of the PHQ-9 items are rated using a Likert-type scale from 0–3, with a range of 0–27.[25]

The PHQ-9 focuses on the nine diagnostic criteria for *Diagnostic and Statistical Manual of Mental Disorders, 4th edition* (*DSM-IV*) depressive disorders and is very brief. The PHQ-9 can be self-administered or interviewer-administered and is well-validated in the United States as a dual-purpose instrument that yields both a measure of depression severity and criteria-based diagnoses of *DSM-IV* depressive disorders: major depressive disorder (MDD), other depressive disorder (ODD), and any depressive disorder (i.e., MDD or ODD).[25,26] It has also been successfully used in diverse populations, specifically those with HIV.[26,27] Rather than using the differences in diagnoses of ODD and MDD, we dichotomized the depressive disorder diagnoses (depressive disorder versus minimal or no depressive symptoms), since the nine items from the instrument provide a method to calculate a count of symptoms and severity to identify these disorders.

Medical measures including current CD4 cell count, plasma HIV RNA level, and use of antiretroviral therapies were collected from time of the visit. HIV viral load measures are used as proxy for medication adherence. Highly active antiretroviral therapy (HAART) was defined as the use of three or more antiretroviral drugs that included a protease inhibitor or a non-nucleoside reverse transcriptase inhibitor. Virologic suppression was defined as having an HIV RNA of less than 400 copies per milliliter.

Statistical analyses

Descriptive and bivariate analyses were conducted to illustrate and assess differences between gender, race, therapy types, and HIV viral load among the sample. χ^2 analyses were conducted for dichotomous variables and independent sample t tests for continuous variables with depressive disorder symptoms and suicidal ideation as the outcome variables. Analyses that were assessed with the outcome variable of suicidal ideation were conducted among those who had endorsed any suicidal ideation in the past 2 weeks. Education levels were dichotomously defined (high school degree or less and more than a high school degree). There were few non-African American minorities ($n = 46$) and individuals who reported their race as "other," therefore race was dichotomized into Caucasian versus African Americans/other racial/ethnic minorities. Employment status was dichotomized into unemployed (including receiving disability benefits) and employed (part time or full time). There were participants who refused to respond to annual income ($n = 44$). Minimal data were missing among the employment status ($n = 1$) and number of minor dependents ($n = 7$) variables. Income was not used in the analyses due to its theoretical correlation with employment status among this population, actual correlation was calculated ($r = 0.47$). Therefore, the missing data forced a smaller sample size, by listwise deletion in SPSS, for the logistic regression analyses ($n = 510$ regardless of HAART prescription). Logistic regression analyses were conducted to confirm the bivariate analyses, with having symptoms of depressive disorders and suicidal ideation as the outcome variables. All tests were two-tailed and $p < 0.05$ was considered significant. Data analyses were performed using SPSS software (version 16.0, SPSS Inc., Chicago, IL).

Results

A total of 514 individuals completed the assessments. The majority of the sample was male ($n = 348$; 68%) and African American ($n = 305$; 60%). The mean age of the sample was 42 years (± 11). Half of the sample reported having a high school education or less ($n = 254$) and half ($n = 260$) completed a college or graduate degree. Nearly half of the sample reported an annual salary of less than $10,000 ($n = 239$; 47%), while 16% ($n = 76$) reported a 12-month salary of greater than $30,000. One fifth of the patients reported being unemployed ($n = 110$), 32% ($n = 164$) reported receiving disability benefits, and 41% ($n = 209$) were employed either part time ($n = 51$; 10%) or full time ($n = 158$; 31%). One quarter ($n = 129$) of the sample reported supporting one or more individuals who were under 18 years of age in their household. Table 1 shares the demographic characteristics of the sample.

Depressive symptomatology

One quarter of the sample ($n = 129$) endorsed symptoms of ODDs, while 18% ($n = 91$) endorsed symptoms of MDD. These two categories were combined for subsequent analyses. Almost 15% of the sample ($n = 74$) endorsed having suicidal thoughts at least once in the past 2 weeks.

Women, African American or other minorities, individuals who were unemployed, and those who had minor dependents had higher odds of reporting depressive disorder symptoms in univariate analyses. When controlling for gender, race, education, and current HAART prescription, individuals with minor dependents and those who were unemployed had higher odds of expressing depressive disorder symptoms. Among individuals currently prescribed HAART, univariate

Table 1. Clinic Sample Demographic and HIV-Related Medical Characteristics ($n = 514$)

	n	%
Gender		
Male	348	67.7
Female	166	32.3
Race		
Caucasian	163	31.7
African American	305	59.3
Other	46	8.9
Age Category		
18–34 years	141	27.9
35–49 years	253	50.0
≥50 years	112	22.1
Children in home ($n = 507$)		
No minor dependents	378	74.6
≥1 Minor dependent	129	25.4
Employment status		
Employed	209	40.7
Unemployed	304	59.1
Income ($n = 470$)		
≤$10,000	239	50.9
>$10,000	231	49.1
Education		
≤High school degree	254	49.4
>High school degree	260	50.6
HAART prescription		
Currently on HAART	370	72.0
Not on HAART	144	28.0
Viral load (on HAART)		
<400 copies/mL	330	89.2
≥400 copies/mL	40	10.8

HAART, highly active antiretroviral therapy.

analyses revealed that individuals between 18 and 34 years, women, African American or other minorities, those with minor dependents, those who were unemployed, and those with detectable viral loads expressed higher rates of depressive disorder symptoms. When controlling for gender, race, and education, those who were unemployed and had minor dependents had higher odds of having depressive disorder symptoms. Even among those on HAART, individuals with unsuppressed viremia had 2.52 times (95% confidence interval [CI] = 1.22, 5.23) higher odds to express depressive disorder symptoms. See Table 2 for detailed relationships of these factors. The Hosmer and Lemeshow goodness-of-fit statistic for the model was acceptable with $p > 0.05$ at each decile.

There were no differences in suicidal ideation by gender, race, age, supporting a minor dependent, education, and currently being on HAART (Table 3). Among the total sample, individuals who were unemployed had higher odds of expressing suicidal ideation (odds ratio [OR]: 2.62, 95% CI = 1.48, 4.65). Higher rates of suicidal ideation were related to higher rates of depressive disorder symptoms. In adjusted analyses, individuals who were unemployed had 2.65 (95% CI = 1.49, 4.70) times higher odds to express suicidal ideation. Among those on HAART, employment status was the only demographic association related to suicidal ideation in both unadjusted and adjusted analyses. The Hosmer and Lemeshow goodness-of-fit statistic was acceptable in both of the models with $p > 0.05$ at each decile.

Discussion

The findings of our study highlight the need to actively screen and treat individuals with HIV for symptoms of depression. We found considerable prevalence of symptoms of depressive disorders and suicidal ideation among individuals seeking medical care in this urban outpatient HIV clinic.[28] By bivariate analyses, there were significant associations between gender, employment, and having minor dependents with symptoms of depressive disorders. Having active viremia was also associated with symptoms of depressive disorders. Increased risk of depressive disorder symptoms were unemployment, supporting minor dependents, and having detectable viral load.

Suicidal ideation in the current HAART era is poorly described. Several reports regarding suicidal ideation have related these symptoms to limited treatment opportunities.[4,29,30] Suicidal ideation was associated with employment status and annual income. Specifically, those who were unemployed as well as those who reported having an annual income of $10,000 or less were more likely to have had symptoms of suicidal ideation within the past 2 weeks. Our study found no relationship between detectable HIV viral load and suicidal ideation, which is contrary to previous research suggesting that suicidal ideation is more likely to occur with advanced HIV and disease progression.[29–31] However, more research is warranted to understand suicidal ideation in the current HAART era.

Depression has been the most commonly reported symptom of distress among individuals with HIV.[5,16,32] It is well documented that individuals with HIV have higher rates of depression than individuals without HIV.[3,8,31] The relationship revealed in this study that depression may have an impact on virologic suppression is considerable. These findings demand further attention with longitudinal examination with regular depressive symptomatology screening to learn depressive patterns change over time and correlates of those changes. While these results are not unique, the importance of screening depressive symptoms is paramount in the comprehensive care of individuals with HIV.[9,14,33,34] Screening and treatment of depression could potentially improve health-protective behaviors. Increasing understanding of the individual challenges of living with HIV may allow further interventions to reduce HIV transmission and improve HIV-related health outcomes. Furthermore, this routine screening of depression may offer an important opportunity to allow individuals who have never before examined their psychological distress symptoms and levels.[18] HIV-related support services have created a chance for individuals to seek mental health care as an important component of a comprehensive care model.[35]

Unemployment has previously been associated with higher rates of depressive symptoms, lower quality of life, and higher levels of HIV RNA and lower CD4 cell counts, as was found in this study.[36,37] In the era prior to HAART, individuals were leaving work due to advanced AIDS, opportunistic infections, medication side effects, and shorter life expectancy. With the improvements in treatment, individuals have the opportunity to continue or return to work, which has been associated with

Table 2. Depressive Disorder Symptoms by Characteristic of the Total Study Sample and those on HAART

	Total sample (n = *510*)				*Sample on HAART* (n = *370*)			
	ODD/MDD Symptoms		*Unadjusted odds ratio (95% confidence interval)*	*Adjusted odds ratio (95% confidence interval)* (n = *502*)	*ODD/MDD symptoms*		*Unadjusted odds ratio (95% confidence interval)*	*Adjusted odds ratio (95% confidence interval)* (n = *360*)
	n	%			n	%		
Age								
18–34 years	63	44.7			45	54.9	1.93 (1.15, 3.23)[a]	1.37 (1.03, 1.94)
35–49 years	119	46.5			80	41.9	Ref	Ref
≥50 years	44	38.9			31	33.0	Ref	Ref
Gender								
Male	141	40.9	Ref		101	38.8	Ref	
Female	85	51.5	1.54 (1.06, 2.23)[a]		55	51.4	1.67 (1.06, 2.62)[a]	
Race								
Caucasian	59	36.9	Ref		45	34.4	Ref	
African American/ Other minorities	167	47.7	1.56 (1.06, 2.29)[a]		111	47.0	1.70 (1.09, 2.64)[a]	
Children in home								
No minor dependents	151	40.3	Ref	Ref	104	37.5	Ref	Ref
≥1 Minor dependent	71	55.5	1.85 (1.23, 2.78)[a]	2.10 (1.37, 3.21)[b]	49	58.3	2.33 (1.42, 3.83)[b]	2.17 (1.25, 3.77)[a]
Employment status								
Employed	63	30.4	Ref	Ref	47	32.2	Ref	Ref
Unemployed	162	53.6	2.65 (1.82, 3.82)[b]	2.98 (2.26, 4.38)[b]	108	49.1	2.03 (1.31, 3.14)[b]	2.47 (1.54, 3.97)[b]
Education								
≤High school degree	121	48.0	Ref		74	44.6	1.17 (1.30, 1.77)	
≥High school degree	105	40.7	1.35 (1.06, 1.91)		82	40.8	Ref	
HAART Prescription								
Currently on HAART	156	42.5	Ref		N/A	N/A	N/A	
Not on HAART	70	49.0	1.30 (1.36, 1.91)					
Viral load								
<400 copies/mL	N/A	N/A	N/A	N/A	130	39.8	Ref	Ref
≥400 copies/mL					26	65.0	2.81 (1.42, 5.59)[a]	2.52 (1.22, 5.23)[a]

[a] $p < 0.05$.
[b] $p < 0.001$.
HAART, highly active antiretroviral therapy; ODD, other depressive disorder; MDD, major depressive disorder.

better quality of life, less psychological distress, and increased socioeconomic status.[37–40] Yet, returning to work continues to be a challenge for individuals with HIV; these challenges include health insurance coverage, serostatus disclosure to coworkers and experienced stigma at work.[36] Therefore, the continued nature of overall psychological distress and stressors may perpetuate challenges with treatment and disease progression.

The causal relationship between HIV viral loads and depressive symptomatology is impossible to disentangle without a longitudinal examination. In this study, regression models suggested that virologic suppression and therefore medication adherence, for which it is a good proxy, was lower among those with more depressive symptoms. Furthermore, we conducted analyses controlling for all individuals who were receiving HAART and found the same results: having a detectable viral load, being unemployed, and having minor dependents places individuals at increased odds for depressive disorder symptoms. It is unclear if individuals are experiencing high levels of distress and therefore, not taking their HIV medications with resultant suboptimal viral load suppression or whether ongoing uncontrolled viremia causes depression. While we cannot elucidate a definitive pathway, it is clear that higher levels of depressive symptomatology are negatively related to virologic suppression.

Caring for children or other minor dependents may serve as an additional stressor in the lives of individuals with HIV that leads to higher rates of depression. Similar findings have been reported, yet few examinations have assessed causal relationships.[41,42] Serostatus disclosure to children at home, medication adherence, and having symptoms of HIV disease may function synergistically in developing this depressive symptomatology, yet derivation of the stressor is unclear and could be clarified with longitudinal examination. A better understanding of the longitudinal impact of having minor dependents on the distress levels will provide intervention opportunities for the caregivers with HIV. Additionally, implications to the care for parents with HIV are significant. These findings highlight the elevated levels of psychological distress that have been found among women and mothers with HIV.[41,43] Exploring relationships of distress among women with children is important to understand how to best intervene in the clinic environment to support their daily lives.

The related limitations are evident for this cross-sectional study design of one outpatient clinic population. This study uses a depression screening tool that has been shown to be

Table 3. Suicidal Ideation by Characteristic of the Total Study Sample and those on HAART

	Total sample				*Sample on HAART*			
	Suicidal ideation endorsement		*Unadjusted odds ratio (95% CI)*	*Adjusted Odds ratio (95% CI) (n = 500)*	*Suicidal Ideation endorsement*		*Unadjusted odds Ratio (95% CI)*	*Adjusted odds Ratio (95% CI) (n = 360)*
	n	%						
Gender								
Male	53	15.4	Ref		37	14.2	Ref	
Female	21	12.9	1.23 (1.40, 2.11)		17	15.9	1.14 (1.64, 2.13)	
Race								
Caucasian	20	12.5	Ref		17	13.0	Ref	
African American/ other minorities	54	15.5	1.29 (1.35, 2.23)		37	15.7	1.25 (1.49, 2.32)	
Employment status								
Employed	17	8.2	Ref	Ref	10	6.8	Ref	Ref
Unemployed	57	19.0	2.62 (1.48, 4.65)[b]	2.65 (1.49, 4.70)[b]	44	20.0	3.40 (1.65, 7.00)[b]	3.43 (1.66, 7.06)[b]
Children in home								
No minor dependents	59	15.8	Ref		41	14.8	Ref	
≥1 Minor dependent	15	11.8	1.40 (1.31, 2.56)		13	15.5	1.05 (1.87, 2.08)	
Education								
>High school degree	31	12.0	Ref		26	12.9	1.37 (1.31, 2.43)	
≤High school degree	43	17.2	1.52 (1.08, 2.51)		28	16.9		
HAART prescription								
Currently on HAART	54	14.7	Ref		N/A	N/A	N/A	
Not on HAART	20	14.2	1.04 (1.60, 1.82)					
Viral load								
<400 copies/mL	N/A	N/A	N/A	N/A	47	14.4	Ref	
≥400 copies/mL					7	17.5	1.26 (1.89, 3.02)	

[a] $p < 0.05$.
[b] $p < 0.001$.
HAART, highly active antiretroviral therapy; CI, confidence interval.

appropriate, yet as with all screening may be overly sensitive to symptoms that may not indicate diagnoses.[25] These results do not offer insight to the causal relationship of these factors, although they are able to highlight the need for longitudinal examination to offer opportunity for improved intervention.

This study served to examine the prevalence and severity of depressive symptomatology in an HIV outpatient clinic in the United States. These findings stress the importance of screening and treatment of depression as an integral component of HIV care. Future research should examine causal relationships of sociodemographic factors that may serve as indicators of higher depressive symptomatology.

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