ART initiation, regardless of regimen, is associated with improvement in self-reported depression

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BACKGROUND

- Depression is up to two times more common in HIV infected cohorts
- Depression is associated with decreased antiretroviral therapy (ART) adherence, which increases virologic failure, morbidity, and mortality
- Efavirenz-based therapy has been shown to increase suicidality
- Limited studies examine the association between ART and depression in observational cohorts

OBJECTIVES

- To examine the association between sociodemographic and ART-specific factors and depression at 12 months following ART initiation in treatment-naïve PLWH

METHODS

• Treatment Naïve Persons Living with HIV (PLWH) initiating ART between Jan 2007 and Dec 2012 at the HIV clinic affiliated with the University of Alabama at Birmingham (UAB), Birmingham, AL.

• Patient Health Questionnaire 9 (PHQ9) scores were used to asses patient-reported depression. Scores of 10 or greater were categorized as having “Major depression” while those with scores <10 as “No/Mild depression.”

• Depression (as score and a clinical category) before (baseline visit) and after ART initiation were compared for both efavirenz-based and non-efavirenz-based regimens.

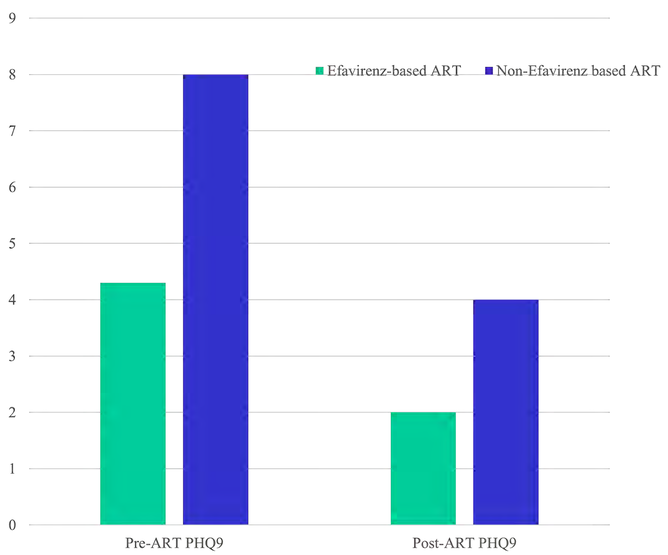
•Univariate and multivariable logistic regression analyses were used to evaluate the relationship between baseline factors and patient-reported depression 12 months after ART initiation

RESULTS

Socio-demographic characteristics of the treatment -naïve PLWH initiating ART at UAB HIV clinic between 2007-2012

Baseline Characteristics	Total	Post-ART Major Depression	Post-ART Mild/No Depression
	N=281	N=61 (%)	N =230 (%)
Initial ART Regimen[d]			
Efavirenz-based	143	24 (18)	112 (82)
Other	145	35 (24)	110 (76)
Pre-ART Depression[e]			
Major	85	37 (43)	48 (56)
Age (years)			
>45	58	15 (26)	43 (74)
30-45	116	28 (24)	88 (76)
<30	107	16 (15)	91 (85)
Sex			
Female	48	14 (29)	34 (71)
Male	233	45 (19)	188 (81)
Race			
White	111	26 (23)	85 (77)
Black	170	33 (19)	137 (81)
Transmission risk factor			
Heterosexual	91	23 (25)	68 (75)
IVDU	19	3 (16)	16 (84)
MSM	170	33 (19)	137 (81)
Insurance			
Public	22	4 (18)	18 (82)
Uninsured	135	37 (27)	98 (73)
Private	124	18 (15)	106 (85)
Alcohol use[f,g]			
At risk	58	10 (17)	48 (83)
Low/No	201	45 (22)	156 (78)
Substance use[f,h]			
Current	43	11 (26)	32 (74)
Prior/Never	221	44 (20)	177 (80)

Change in median PHQ9 scores before, after ART initiation in treatment-naïve PLWH initiating ART



RESULTS

Association of baseline sociodemographic and patient-reported outcome measures and ART on 12-month depression in PLWH newly engaged in care at UAB during 2007-2012.

Baseline Characteristics	Unconditional Logistic Regression Analysis			
	Univariate		Multivariable	
	Unadjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Initial ART Regimen[d]				
Efavirenz-based	0.7 (0.4, 1.2)	0.18	0.9 (0.4, 1.8)	0.69
Other	Ref	Ref	Ref	Ref
Pre-ART Depression[e]				
Major	**6.1 (3.3,11.3)**	**<0.001**	**8.1 (3.9, 16.8)**	**<0.001**
Age (years)				
>45	2.0 (0.9, 4.4)	0.09	2.9 (1.0, 8.5)	0.05
30-45	1.8 (0.9, 3.6)	0.09	2.2 (0.9, 5.3)	0.09
<30	Ref	Ref	Ref	Ref
Sex				
Female	1.7 (0.9, 3.5)	0.13	1.6 (0.5, 4.7)	0.43
Male	Ref	Ref	Ref	Ref
Race				
White	1.3 (0.7, 2.3)	0.42	1.6 (0.7, 3.5)	0.22
Black	Ref	Ref	Ref	Ref
Transmission risk factor				
Heterosexual	1.4 (0.8, 2.6)	0.27	0.9 (0.3, 2.4)	0.76
IVDU	0.8 (0.2, 2.8)	0.70	0.2 (0.04, 1.0)	0.05
MSM	Ref	Ref	Ref	Ref
Insurance				
Public	1.3 (0.4, 4.4)	0.66	0.8 (0.2, 3.5)	0.81
Uninsured	**2.3 (1.2, 4.2)**	**0.01**	**2.6 (1.2, 5.7)**	**0.02**
Private	Ref	Ref	Ref	Ref
CD4 (per cu mm)[f]				
<200	1.3 (0.7, 2.5)	0.39	1.3 (0.7, 3.4)	0.32
≥200	Ref	Ref	Ref	Ref
Viral load (copies/ mL), log10				
$<10^5$	1.0 (0.5, 1.8)	0.91	1.7 (0.8, 3.8)	0.19
$\geq 10^5$	Ref	Ref	Ref	Ref
Alcohol use[f,g]				
At risk	0.7 (0.3, 1.5)	0.4	0.4 (0.2,1.0)	0.03
Low/No	Ref	Ref	Ref	Ref
Substance use[f,h]				
Current	1.4 (0.7, 3.0)	0.40	2.4 (0.9, 6.6)	0.09
Prior/Never	Ref	Ref	Ref	Ref

NOTE: The percentages reported are row percentages. Bold- Bold typeface indicates statistical significance at 0.05 level. ART=Antiretroviral therapy; IVDU=Intravenous drug use; MSM=Men who have sex with men; OR=Odds ratio; PLWH=People living with HIV; UAB=University of Alabama at Birmingham (Birmingham, AL, USA).
[a]Baseline factors obtained prior to ART initiation.
[b]Post-ART depression was assessed at 12 months using PHQ-9 questionnaire and categorized as “Major” when the score was ≥10 and as “Mild/No” when the score was ≤9.
[c]Model performance: C-statistics=0.801; Max-rescaled r-square=28.6%; Hosmer-L test p-value=0.61.
[d]ART denotes antiretroviral therapy containing ≥ 3 antiretroviral agents received for ≥14 days.
[e]Pre-ART depression was measured within 365 days before ART initiation.
[f]Estimates of the “unknown” categories are not shown (CD4=47; Alcohol use=22; Substance use=17; Transmission Risk=1).
[g]Assessed using the Alcohol Use Disorder Identification Test - Consumption(AUDIT-C) questionnaire.
[h]Assessed using the Alcohol, Smoking, Substance Involvement Screening Test (ASSIST).

RESULTS

- A total of 281 treatment naïve PLWH met inclusion criteria
- PHQ9 score was significantly higher (p<0.001) at baseline (median=6.0; quartiles: 2, 11) than at 12 months (median=3.0; quartiles: 0, 8).
- For those receiving an Efavirenz -based regimen (N=136), initial median PHQ9 score was 4.3 prior to ART and 2.0 after initiating ART
- Those receiving non- Efavirenz based regimens (N=145), median scores were 8.0 and 4.0, respectively.
- Regardless of ART regimen, the odds of depression were higher at baseline than at 12 months (OR_{paired}=2.2; 95% CI: 1.3 – 3.6;)
- A higher proportion of baseline depression in patients receiving other regimens as compared to those receiving Efavirenz was indicative of channeling bias which was “adjusted” in multivariable analyses
- In multivariable analysis, the odds of depression were significantly higher in those reporting depression at baseline ($OR_{adjusted}$= 8.1; 95% CI: 3.9-16.8; p<0.001) and among those without insurance ($OR_{adjusted}$=2.6, 95% CI 1.2-5.7)
- There was no difference between the proportion receiving Efavirenz and non-Efavirenz based ART in those excluded and the study population (p=0.26).

CONCLUSIONS

•All treatment naïve PLWH initiating ART experience a reduction in patient reported depression

• Improvements in depressive symptoms for those receiving Efavirenz-based therapy is particularly reassuring for treatment-experienced patients receiving Efavirenz

•Aggressive management of mental health comorbidities and insurance enrollment is needed

•Research is needed to understand the relationships between ART composition, mood disorders, insurance status and long-term depression

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