Trends in depression among patients presenting for ART in rural Uganda

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Abstract

Objective: We sought to estimate secular trends in depression among people living with HIV (PLHIV) at antiretroviral therapy (ART) initiation and to understand the factors explaining these trends.

Methods: Using data from a cohort of treatment-naïve PLHIV living in rural Uganda, a linear regression model was fitted to the baseline data with depression symptom severity, measured using a locally adapted version of the Hopkins Symptom Checklist (HSCL-D), as the outcome variable and year of cohort entry (2005-2012) as the explanatory variable. We adjusted our estimate using baseline socio-demographic characteristics. Next, we assessed physical health score, body mass index, and CD4 count as potential mediators of the secular trend in depression symptom severity by adding the variables of interest to the model and re-assessing the statistical significance of the regression coefficient for year of entry.

Results: 534 persons with complete data, including 379 women (71.0%), were included in the models. 154 (28.8%) respondents had HSCL-D scores consistent with probable depression (women, 35.4% vs. men, 12.9%; p<0.001). A linear regression model revealed a statistically significant negative association between year of entry into cohort and HSCL-D (*b*=-0.05; 95% CI, -0.07 to -0.03) at entry, suggesting a 3.1% relative decline in the mean depression symptom severity score at ART initiation in each year of study recruitment after the first year. After adjustment for baseline socio-demographic characteristics, the addition to the model of physical health score, but not CD4 count, caused a reduction in magnitude and loss of statistical significance for the regression coefficient for year of entry (*b*=-0.018; 95% CI, -0.038 to 0.002).

Conclusions: Mean depression severity scores at ART initiation declined over time among PLHIV in a rural Ugandan cohort. This secular trend appeared to be explained by better physical health at ART initiation.

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Background

- Among people living with HIV (PLHIV), depression has been associated with poorer HIV-related outcomes, including
  - increased transmission risk **[1,2]**
  - poorer ART adherence **[3]**
  - more rapid CD4 decline **[4,5]** and progression to AIDS and death **[5,6,7]**
- Little is known about trends in depression at ART initiation among PLHIV in low- and middle-income countries during the early years of expansions in access to ART
- Because PLHIV with better physical health may be less likely to be depressed **[8, 9,10]**, earlier ART initiation may result in declines in depression at treatment initiation among PLHIV presenting for ART, although the extent to which this has occurred is unknown

The UARTO Study

- Data were drawn from the pre-treatment baseline observation for each participant in the Uganda AIDS Rural Treatment Outcomes (UARTO) study, a prospective cohort of treatment-naïve PLHIV initiating ART in Mbarara, Uganda
- Ethical approval for all study procedures obtained through Partners/MGH, UCSF, and Mbarara U. of Science & Technology

Measures

- Primary outcome of interest: 15-item Hopkins Symptom Checklist for Depression
  - Modified for local context with the addition of a 16th item (“feeling like I don’t care about my health”)
  - Removed four somatic items and averaged across remaining 12 cognitive-affective items to avoid overlap between symptoms of depression and symptoms of HIV infection
- Explanatory variables of interest
  - Medical Outcomes Study-HIV Health Survey (MOS-HIV) Physical Health Summary (PHS) score
  - CD4+ T-lymphocyte cell count
  - Body mass index (BMI)

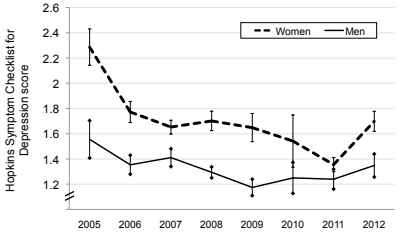
Statistical Analysis

- Fitted a linear regression model to the baseline data with depression symptom severity as the outcome variable and year of cohort entry (2005-2012) as the explanatory variable
- Adjusted for baseline age, gender, educational attainment, marital status, household asset wealth, employment status, alcohol use
- Assessed PHS, CD4 count, and BMI as potential mediators of the secular trend in depression symptom severity by adding the variables of interest to the model and re-assessing the statistical significance of the regression coefficient for year of entry

Results

- 534 persons with complete data, including 379 women (71.0%), were included in the models
- 35.4% of women vs. 12.9% of men (p<0.001) had HSCL-D scores consistent with probable depression (>1.75)
- Linear regression model revealed a statistically significant negative association between year of entry into cohort and HSCL-D (*b*=-0.05; 95% CI, -0.07 to -0.03) at entry, suggesting a 3.1% relative decline in the mean depression symptom severity score at ART initiation in each year of study recruitment after the first year

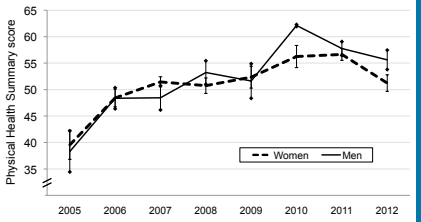
Figure 1: Mean HSCL-D scores by year of entry, stratified by gender Bars represent standard errors



Results (continued)

- After inclusion of baseline socio-demographic characteristics, the adjusted regression coefficient for year of entry remained statistically significant (*b*=-0.04; 95% CI, -0.06 to -0.02)
- The addition to the model of physical health score, but not CD4 count, caused a reduction in magnitude and loss of statistical significance for the regression coefficient for year of entry (*b*=-0.018; 95% CI, -0.038 to 0.002)
- Fitting a model with PHS as the outcome variable and year of entry as the explanatory variable, we found a statistically significant positive association between year of entry and PHS (adjusted *b*=1.33; 95% CI, 0.90-1.77)

Figure 2: Mean PHS scores by year of entry, stratified by gender Bars represent standard errors



Conclusions

- Mean depression severity scores among PLHIV at ART initiation declined over time
- This secular trend appeared to be explained by better physical health at ART initiation
- Further study is needed to demonstrate whether earlier ART is associated with diminution of depression-related sequelae

References

[1] Olley BO, Seedat S, Stein DJ, J Psychosom Res. 2006;61:479-84. [2] Meade CS, Sikkema KJ. Clin Psychol Rev. 2005;25:433-57. [3] Holzemer WL *et al.*, AIDS Patient Care STDs. 1999;13:185-97. [4] Burack JH *et al.*, JAMA. 1993;270:2568-73. [5] Ickovics JR *et al.*, JAMA, 2001;285:1466-74. [6] Cook JA *et al.*, Am J Public Health. 2004;94:1133-40. [7] Antelman G *et al.*, JAIDS. 2007;44:470-7. [8] Maj M *et al.*, Arch Gen Psych. 1994;51:39-49. [9] Mast TC *et al.*, AIDS Care. 2004;16:81-94. [10] Mello VA, Segurado AA, Malbergier A. Arch Womens Ment Health. 2010;13:193-9.