Depression and HIV Disease Progression among Women who Seroconverted During Participation in Microbicide Trials: Effects of Social and Behavioral Intermediary Factors among Treatment Naïve Women Who Are Not Engaged in Care

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Background

- Depression impacts HIV treatment outcomes, including increased viral load (VL) and CD4 count fluctuations
- There is little data on the impact of depression on HIV-related outcomes in antiretroviral (ARV) untreated populations
- We examine depression as a direct and indirect cause of variability in VL through potential mediation pathways among treatment-naïve women living with HIV

Methods

- MTN-015 is a longitudinal cohort study following women in Southern Africa who become HIV-positive during MTN trials
- This analysis used cross-sectional enrollment data from 395 participants following seroconversion in MTN-003 or MTN-020 studies
 - Participants were >18 years old, ARV-naïve, and not engaged in HIV care
 - VL (outcome variable) was categorized as: natural viral suppression (≤ 400 copies), low VL (401-20,000 copies), and high VL ($>20,000$ copies)
 - Depression was assessed using eight-items from the Hopkins Symptom Checklist; a cutoff of ≥ 1.75 (determined via sensitivity analysis) indicated depression
 - Unadjusted ordered logistic regressions estimated relationships between VL and each predictor
 - Predictors significant at $p \leq 0.05$ were included in an adjusted regression and a subsequent mediation analysis, which was controlled for time since seroconversion

Results

- Table 1 summarizes the demographic characteristics of the sample
- Depression prevalence by VL was: natural viral suppression (6.1%), low VL (12.8%), and high VL (14.4%)
- Depression was positively associated with high HIV VL, compared to other categories [OR=1.66; 95% CI=1.08-2.58] and the participant having a sexual partner was negatively associated with the outcome variable (HIV VL) [OR=0.38; 95% CI=0.15-0.70] (Table 2)
- The mediation analysis revealed that having a sexual partner was negatively associated with depression [OR=0.32; 95% CI=0.15-0.70] (Table 2, col. 3)
- However, depression was not a significant predictor of HIV VL after controlling for the mediator (participant having a sexual partner)[OR=1.64; 95% CI=0.86-3.13], consistent with the mediation hypothesis, even if controlled for time since seroconversion.

Conclusions

- We did not detect an association between depression and VL in the adjusted model. This could be because the instrument was unable to differentiate between mild and severe depression. A more culturally appropriate version should be used in the future
- The mediation analysis could suggest a positive influence of having a partner on VL among treatment-naïve HIV-positive women who are not engaged in care in Southern Africa
- This may imply that support/counseling for maintaining a thriving relationship could be helpful in this context. Maintenance of sexual partnerships could potentially hedge against depression’s effect on VL; future studies should explore how this occurs
- Still, it is important to note that factors unexplored in this analysis may also drive differences in VL. It is especially important to recognize that the mediator has several confounders that were not explored in this analysis (e.g., financial support, housing). Findings should be interpreted with caution.

Table 1: Demographic Characteristics of ART-Naïve Women Enrolled in MTN-015

Variable ¹	Mean (SD)	N (%)
Age, years	24.4 (4.5)	
# Days living with HIV	90.3 (104.9)	
Has a sexual partner		332 (91.7%)
Husband or partner is HIV+		127 (71.8%)
Married/cohabitating		60 (16.7%)
Depression		113 (30.2%)
Viral load		
Natural viral suppression		35 (9.1%)
Low		187 (48.8%)
High		161 (42.0%)

¹ Some measures are affected by missing data. In this case the denominator does not add up to N=395

Table 2: Results of Unadjusted and Adjusted Ordered Logistic Regressions at the $p<0.05$ Level Summarizing Relationships between HIV Viral Load and Independent Variables

Variable	Unadjusted OR [95% CI]	Adjusted OR [95% CI]	Mediation [95% CI]
Has sexual partner	0.38* [0.18-0.82]	0.42 [0.10-1.75]	0.32* [0.15-0.70]
Depression	1.66* [1.08-2.58]	1.64 [0.86-3.13]	

* $p \leq 0.05$