Factors Associated with and Management of High Viral Loads Among Pregnant and Post-Partum Women Living with HIV in Southwestern Kenya: A Mixed Methods Study

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Background

- High viral load is the most important risk factor for perinatal transmission of HIV[1]
- Viral load is highly dependent on adherence to antiretroviral therapy (ART)[2]
- Multiple barriers at the health system, family/partner, and individual levels influence adherence among pregnant post partum women living with HIV (PWLWH)[3]
- There are several interventions that address these barriers but few target barriers at multiple levels[4]

Methods

- **Design: Mixed Methods**
  - *Qualitative:* Univariate and multivariate logistic regression was used to establish predictors of high viral load (viral load ≥ 1000 copies/mL)
  - *Quantitative:* Thematic analysis was conducted using 40 case reviews of PWLWH with high viral load to provide more context to the quantitative analysis and examine interventions recommended for PWLWH with high viral load
- **Setting:** Five government clinics in southwestern Kenya
- **Population:** 557 PWLWH enrolled in the Opt4Mama's study, a pre/post-intervention prospective cohort study introducing point-of-care viral load testing

Results

Quantitative Results

Table 1. Univariable and Multivariate Logistic Regression for High Viral Load in Pregnant or Post-Partum Women with HIV

Variable	Odds Ratio (95% Confidence Interval)	Adjusted Odds Ratio (95% Confidence Interval)[1]
Maternal age	0.89 (0.85, 0.94) ***	0.92 (0.85, 0.99) *
Primigravida	2.76 (1.39, 5.49) **	0.73 (0.24, 2.06)
New Diagnosis	6.42 (3.46, 11.92) ***	3.47 (1.84, 8.97) ***
Depression	4.48 (1.63, 12.30) *	2.56 (1.59, 33.21) **
Internal Stigma	3.36 (1.35, 8.34) **	0.42 (0.07, 2.60)
Enacted Stigma	7.92 (2.34, 26.83) ***	1.32 (0.50, 30.41)
Adherence	0.05 (0.01, 0.20) ***	0.03 (0.00, 0.16) ***
Disclosure	0.46 (0.26, 0.80)	0.86 (0.42, 1.77)
Male Partner Involvement	0.35 (0.19, 0.62) ***	0.64 (1.45, 810.23)

p<0.05*
p<0.01**
p<0.001***
[1]All variables listed above were included in the adjusted model.

Qualitative Results

- Thematic analysis of case reviews revealed four themes related to high viral load:
  - **multilevel contributing factors:** the most common interventions used to investigate barriers contributing to high viral load were home investigations and multidisciplinary team discussions and the most common factors cited included drug resistance, new HIV diagnosis, difficulty maintaining adherence, disclosure problems, missed appointments, loss to follow up, and psychosocial problems
  - **adherence challenges and support:** adherence was monitored with pill counts during visits and interventions to support adherence included phone alarms, enhanced adherence counseling, and direct observed therapy
  - **drug resistance and ART regimen changes:** changing the ART regimen either to address resistance or for optimization was a common intervention
  - **psychosocial support:** socioeconomic, psychological, social, and disclosure support were four sub-themes uncovered which included a total of nine different interventions
- All women who reported problems maintaining adherence were also reported to have psychosocial challenges
- Most women had multiple factors contributing to their high viral load and multiple interventions were combined to address the unique contributing factors affecting women with high perinatal viral loads.

Two Cases with Adherence Problems

- A woman struggling with alcohol use disorder
- Recommendations to reduce pill burden to once per day along with social, socioeconomic, and adherence support

- A woman struggling with stigma who has not disclosed to her partner
- Recommendations for a home visit along with psychological, social, disclosure, and adherence support

Conclusions

- High viral loads were positively associated with new HIV diagnosis and depression and negatively associated with age and self reported adherence
- A multifactorial approach to address the variety of psychosocial challenges women with HIV face is required to promote maternal health and facilitate perinatal HIV prevention

References

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