INTRODUCTION

- HIV medication adherence is integral to effective treatment of HIV, yet national United States surveillance reports indicate sub-optimal adherence to antiretroviral therapy (ART).
- Prior studies suggest that HIV-related internalized stigma (acceptance of stigmatizing beliefs and related feelings of shame and lower self-worth) inhibits adherence to HIV care recommendations.
- Few studies have investigated mediating mechanisms for the effects of internalized stigma on medication adherence, and prior studies in this area have been conducted with predominantly male and Caucasian samples.
- Increased understanding of how or why internalized stigma leads to variation in levels of ART adherence within a more diverse sample is important to developing a theoretical understanding of these relationships.
- The current study investigates:
  - Whether social isolation (loneliness and lack of social support) and depressive symptoms mediate the relationship between internalized stigma and ART non-adherence among women living with HIV in the U.S.
  - Whether these associations differ by race within this population.
- We hypothesized a serial mediation model whereby: internalized stigma → higher social isolation (higher loneliness or lower social support) → depressive symptoms → ART non-adherence.

METHODS

Study Sample

Women living with HIV enrolled in the Women’s Interagency HIV Study (WIHS) for whom data on medication adherence was collected at their last study visit between April 2013 and March 2014.

Data were collected from 9 WIHS sites in California, New York, D.C., Illinois, Georgia, North Carolina, Florida, Alabama and Mississippi.

Measures

- Adherence: self-report of how often participants took their HIV medication as prescribed over the past 6 months, dichotomized at 95% or higher versus lower than 95%.
- Internalized HIV-related Stigma: the negative self-image subscale of the revised HIV Stigma Scale. To.
- Depressive symptoms: the 20-item Center for Epidemiologic Studies Depression (CES-D) scale.
- Social support: a shortened 15-item version of the MOS Social Support Survey.
- Loneliness: a three-item version of the R-UCLA Loneliness Scale.

Data Analyses

- We used descriptive statistics to examine the study sample characteristics.
- We conducted logistic regression analysis to determine predictors of ART adherence.
- Internalized stigma was the primary independent variable, and covariates included race, age, time on ART, drug use, income, and education.
- Sensitivity analyses were conducted using mediation analysis as a continuous dependent variable.
- We performed mediation analyses using Process to test whether the association between internalized HIV stigma and adherence is explained by social isolation and depressive symptoms.
- All analyses were performed in SPSS (version 20).

RESULTS

Table 1. Descriptive statistics for the study sample (n=1168)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n (%)</th>
<th>Variable</th>
<th>Mean (SD)</th>
<th>Possible Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>139 (11.9)</td>
<td>Education</td>
<td>4.09 (1.05)</td>
<td>1 - 7</td>
</tr>
<tr>
<td>Non-Hispanic Black</td>
<td>788 (67.5)</td>
<td>Income</td>
<td>3.37 (2.14)</td>
<td>1 - 8</td>
</tr>
<tr>
<td>Hispanic</td>
<td>200 (17.1)</td>
<td>Years on ART</td>
<td>11.08 (8.30)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>41 (3.5)</td>
<td>Internalized HIV-related Stigma</td>
<td>1.74 (0.62)</td>
<td>1 - 4</td>
</tr>
<tr>
<td>Non-injected drug use</td>
<td>256 (22.0)</td>
<td>Depressive Symptoms</td>
<td>12.23 (11.27)</td>
<td>0 - 60</td>
</tr>
<tr>
<td>Injected drug use</td>
<td>10 (0.9)</td>
<td>Social Support</td>
<td>4.01 (1.02)</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Adherence (&lt;95%)</td>
<td>201 (17.2)</td>
<td>Loneliness</td>
<td>1.40 (0.59)</td>
<td>1 - 3</td>
</tr>
</tbody>
</table>

- Initial logistic regression models revealed that internalized stigma was a significant predictor of sub-optimal adherence (AOR = 0.757, p = .042, CI [0.579,0.990]).
- Predictors of better adherence included non-Hispanic white race/ethnicity, older age, less years on ART, and non-use of non-injection drugs.
- When an interaction term between internalized stigma and race was added, the interaction term was also significant (AOR = 3.378, p = .026, CI [1.155,9.880]).
- When logistic regression was conducted by race, the association between internalized stigma and adherence was significant for those in racial and ethnic minority groups (AOR = 0.689, p = .009, CI [0.521,0.911]) but not for non-Hispanic whites (AOR = 2.216, p = .196, CI [0.87,6.725]).

DISCUSSION

- The findings suggest that potential predictors of adherence may operate differently by race.
- This finding may contribute to our understanding of different rates of adherence and health outcomes by race among women living with HIV.
- The current study findings also suggest that interconnected psychosocial mechanisms affect ART adherence.
- An understanding of these interconnected factors affecting HIV medication adherence provides insights into what conditions/situations can potentially be targeted through interventions.
- Improvements in adherence may require multifaceted interventions addressing both mental health and interpersonal factors, especially for minority women.
- Further research can utilize these findings to develop, investigate, and evaluate such interventions.

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References:


Figure 1. Serial mediation model in the association between internalized HIV stigma and sub-optimal medication adherence for racial/ethnic minority groups (i.e., non-whites) n=1029

- Social Support
- Depression Symptoms
- Adherence

Note: Associations are presented as path coefficients (unstandardized).
- When social support and depression are in the model.
  - p = .05
  - p = .01

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