

Substance Use and Self-Rated Health Among Women at Risk of HIV Acquisition (HPTN 064)

2024 HPTN Annual Meeting

June 16, 2024

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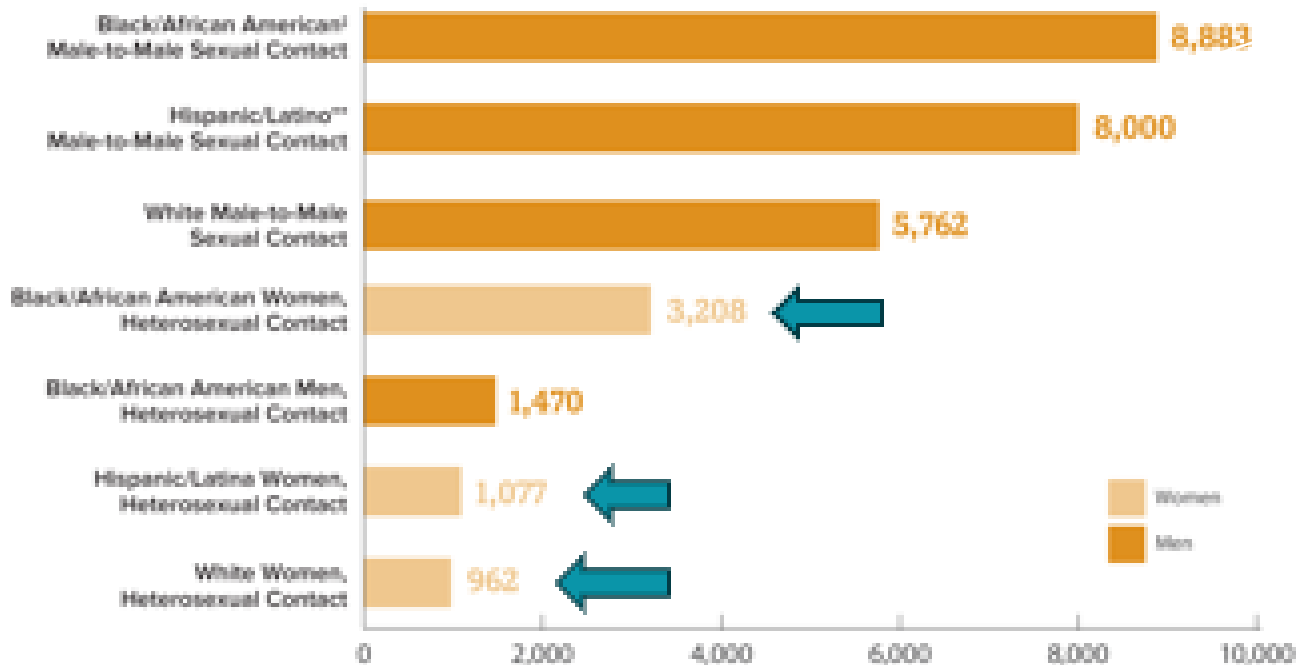
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Background

- Using a single question to rate one's global perception of overall health, commonly referred to as self-rated health, is a quick, valid and inexpensive way to assess clinical health.
- In 2019, 11.2% of US adults rated their overall health as fair/poor. This rate was higher among older adults (25%), Black/African American (15.9%), and those living below 100% of the poverty level (24.6%). Prevalence was similar for adult males and females (11.2%).
- Poor self-rated health is associated with
 - Lower SES
 - Black
 - Older age
 - Women
 - Elevated inflammatory biomarkers

Background

Figure: New HIV Diagnoses in US (2021)



- In 2021, women accounted for 15% (5,247 of 36,136) of the new HIV diagnoses in the US.
- The overall proportion of new HIV diagnoses in women dropped from 19% in 2018 to 15% in 2021.
- In 2021, Black/African American women accounted for a high 61% (3,208 of 5,247).

- In 2021, the substance use epidemic remained a significant public health issue, with 26.6 million women over ≥ 18 years reporting illicit drug use in the prior 12 months.

- Our understanding of the relationship between substance use and self-rated health among women at risk for HIV acquisition remains limited, especially for those living in extreme poverty areas.
- This analysis explores factors mediating the association between substance use and self-rated health among women at risk of HIV acquisition.
- The goal is to help improve health-promotion strategies and interventions.

HPTN 064, The Women's HIV Seroincidence Study, Study Overview



- Longitudinal cohort study of HIV incidence among women in 10 geographic areas in the US with high HIV prevalence and poverty.
- 2099 participants, ages 18-44 years recruited from May 2009 – July 2010, followed for 6-month and 12 months, (93% and 94% retention).
- 88% of the participants were Black and 12% Hispanic/Latina.
- 35% reported any illicit (nonalcohol) substance use and 22% reported weekly use.
- We focused on self-rated health, a measure unlikely to have been affected by secular trends such as advances in HIV prevention.

Project Research Aim

To examine the association between substance use and suboptimal self-rated health and whether mental health conditions mediate this relationship.

- Hypothesis: Substance use leads to suboptimal self-rated health, and the relationship is partially mediated by mental health conditions (e.g., depressive symptoms).

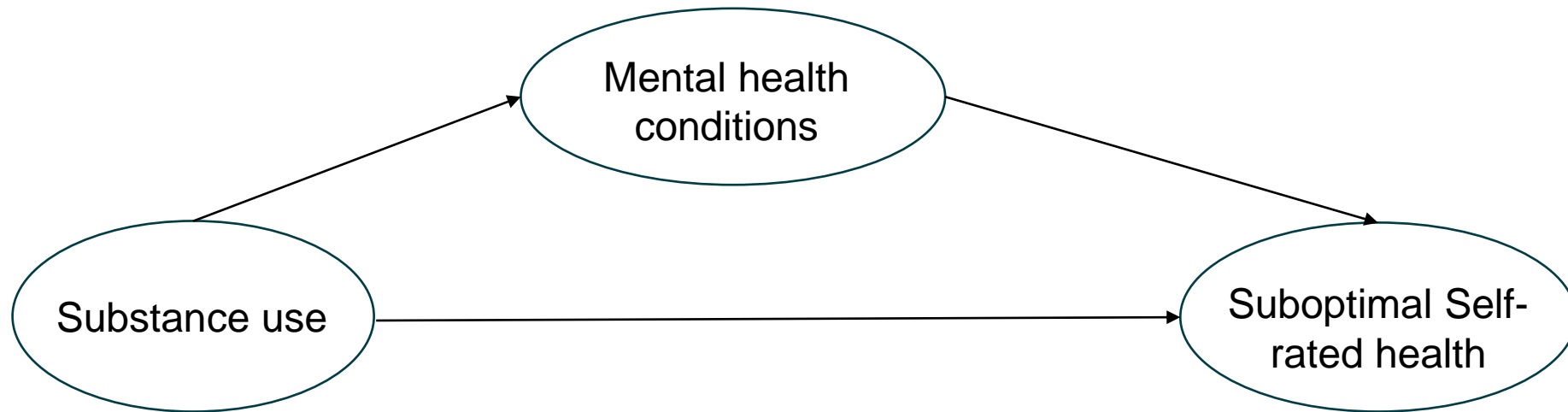


Figure: Hypothetical Mediation Model

Methods/Analysis Plan

- Secondary data analysis using baseline and longitudinal data from 2099 women at risk of HIV acquisition from the HPTN 064 dataset.
- Independent variable: substance use (prior 6 months): alcohol (binge drinking), opioids, cocaine, amphetamine-type stimulants, inhalants, sedatives/sleeping pills and hallucinogens.
 - Frequency for the primary drug: categorized as non-user, non-frequent user (less than weekly and/or monthly) and frequent user (daily to weekly).
 - # of substances: 0, 1, 2, 3 and ≥ 4 .
- Dependent variable: self-rated health, from “In general, would you say your health is:”
 - measured on a 5-point Likert scale (excellent, very good, good, fair, or poor).
 - self-rated health re-categorized:
 - optimal (excellent/very good/good)
 - suboptimal (fair/poor).

Methods/Analysis Plan

- Mediators: Mental health factors
 - Depressive symptoms - CES-D scale; validated 8-item question (range 0-3 per item): ≥ 7
 - PTSD symptoms - Primary Care PTSD scale; 4-item (range 0-4): ≥ 3
- Covariates:
 - Individual factors (demographics, socioeconomic factors, health-related behaviors)
 - Social factors (partner incarceration, social support, violence)
- Analysis Plan:
 - Descriptive statistics, bivariate analysis, regression analysis
 - Causal mediation analysis
 - Supplemental analysis:
 - Change in substance use and its association with change in self-rated health
 - Opioid (vs. non-opioid) use and its association with self-rated health

Results - Baseline

- Among 2057 participants, 37.9% reported frequent substance use and 16.4% reported suboptimal self-rated health.
- Participants who frequently used substances were more likely to report:
 - Older age (35+)
 - Hispanic ethnicity
 - <HS education
 - No health insurance
 - Unstable housing
 - Depressive symptoms
 - PTSD symptoms

Results: Regression Analysis

Table. Association between substance use and suboptimal self-rated health

Suboptimal self-rated health			
	Baseline OR (95% CI)	6 months OR (95% CI)	12 months OR (95% CI)
Number of substances used			
0	Ref	Ref	Ref
1	0.99 (0.69, 1.41)	0.97 (0.67, 1.41)	0.80 (0.51, 1.25)
2	1.15 (0.76, 1.72)	1.23 (0.81, 1.88)	0.84 (0.50, 1.39)
3	1.41 (0.85, 2.35)	1.12 (0.65, 1.95)	0.86 (1.46, 1.61)
4+	1.52 (0.85, 2.72)	1.13 (0.60, 2.11)	1.15 (0.58, 2.30)
Frequency of substance use			
Non-user	Ref	Ref	Ref
Non-frequent user	1.03 (0.72, 1.47)	1.06 (0.73, 1.54)	0.87 (0.55, 1.36)
Frequent user	1.15 (0.79, 1.65)	1.05 (0.70, 1.55)	0.79 (0.49, 1.26)
Model adjusted for individual factors (age, race, ethnicity, education, marital status, household income, health insurance, past 6-months food insecurity, housing stability, depressive symptoms, PTSD, number of sexual partners, condom use and any STI) and social factors (emotional support, financial support, childhood abuse, ongoing abuse, partner incarceration and partner drug use).			

- Non-frequent and frequent substance use were associated with higher odds of suboptimal self-rated health at baseline and 6 months; but associations were not statistically significant.

Results: Mediation Analysis

Table. Mediating effects of mental health conditions on the association between substance use and suboptimal self-rated health at baseline

Substance use	Depressive symptoms		PTSD symptoms	
	Odds ratio (95% CI)	Proportion mediated	Odds ratio (95% CI)	Proportion mediated
Total effect				
Non-user	Ref		Ref	
Non-frequent user	1.11 (0.79, 1.57)		1.11 (0.79, 1.57)	
Frequent user	1.60 (1.14, 2.25)		1.58 (1.12, 2.22)	
Direct effect				
Non-frequent user	1.02 (0.72, 1.44)		1.00 (0.71, 1.42)	
Frequent user	1.27 (0.88, 1.82)		1.44 (1.01, 2.05)	
Indirect effect				
Non-frequent user	1.09 (1.02, 1.17)	0.83 (-1.85, 3.52)	1.11 (1.03, 1.20)	1.00 (-2.16, 4.15)
Frequent user	1.26 (1.11, 1.44)	0.54 (0.11, 0.96)	1.10 (1.00, 1.20)	0.22 (-0.04, 0.49)

Model adjusted for age, race, ethnicity, education, marital status, household income, health insurance, number of sexual partners, condom use and any STI diagnosis.

- Depressive symptoms partially mediated the association between substance use and suboptimal self-rated health at baseline.
- It accounted for 54% of the total effect of substance use on suboptimal self-rated health for those who reported frequent substance use.

- Frequent substance use was associated with suboptimal self-rated health among women at risk of HIV acquisition.
- Depressive symptoms partially mediated this association; accounting for over half (54%) of the total effect of substance use on suboptimal self-rated health.
- PTSD symptoms did not mediate the association between substance use and suboptimal self-rated health in this study population.

Discussion

- The interplay between substance use, depressive symptoms, and self-rated health among women at risk of HIV acquisition is complex and multifaceted

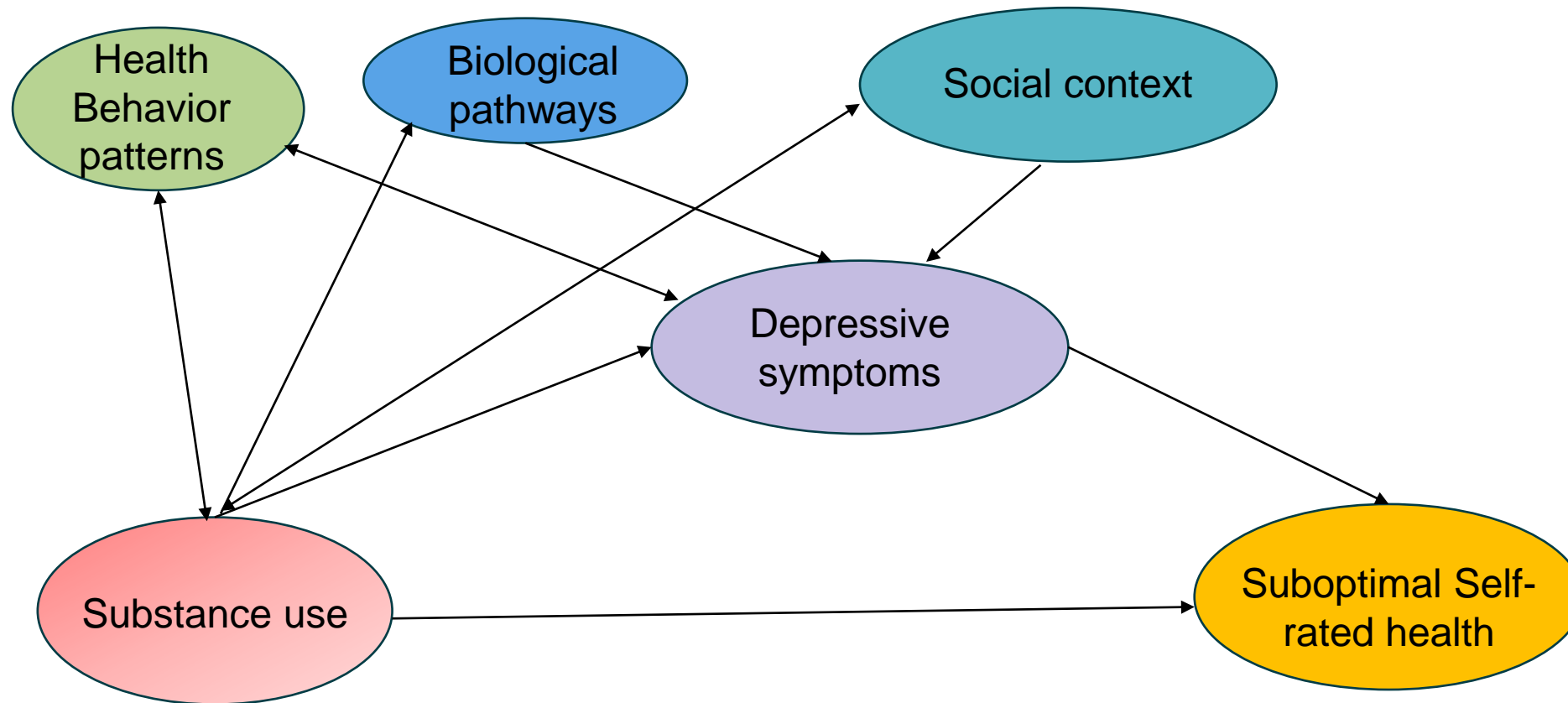


Figure: Potential mechanisms linking substance use and depressive symptoms to suboptimal self-rated health

- Biological pathways:
 - Substance use → neurotransmitter levels and brain functioning → mood dysregulation and exacerbating depressive symptoms.
- Psychological pathways:
 - Substance use often co-occurs with psychological distress
 - Coping mechanism: worsen depressive symptoms and poorer self-rated health perceptions.
- Social Context:
 - Limited social support networks: worsen depressive symptoms and negatively impact self-rated health.
- Health Behavior Patterns:
 - Substance use may increase high-risk sexual behaviors; increasing the likelihood of HIV acquisition and poor self-rated health.

Implications/Future Considerations

- Frequent substance use was associated with suboptimal self-rated health and depressive symptoms seems to play a significant role in this association.
- Healthcare professionals can offer integrated care services that address both substance use and mental health to improve overall self-rated health, alongside HIV prevention measures.
- Longitudinal studies may provide a clearer understanding of the causal relationships between substance use, mental health factors and self-rated health.

Presentation Highlights

1. The analysis assessed the association between substance use and suboptimal self-rated health and whether mental health conditions explain this relationship.
2. Frequent substance use showed a positive association with suboptimal self-rated health, with depressive symptoms partially explaining this association.
3. This research highlights the role of depressive symptoms in the pathway between substance use and suboptimal self-rated health for women at risk of HIV.
 - Moving beyond these study findings, addressing both substance use and mental health may promote optimal self-rated health which may potentially reduce HIV risk.

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Thank you



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Acknowledgments

- Overall support for the HIV Prevention Trials Network (HPTN) is provided by the National Institute of Allergy and Infectious Diseases (NIAID), Office of the Director (OD), National Institutes of Health (NIH), National Institute on Drug Abuse (NIDA), the National Institute of Mental Health (NIMH), and the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) under Award Numbers UM1AI068619-15 (HPTN Leadership and Operations Center), UM1AI068617-15 (HPTN Statistical and Data Management Center), and UM1AI068613-15 (HPTN Laboratory Center).
- The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.