Mental Health and HIV Prevention

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Presentation Objectives

- Association between mental health (MH) and transmission risk behavior (TRB)
- Limited RCTs of MH intervention (that do not focus on risk reduction or adherence) to reduce TRB
- Mediation analysis to understand how interventions work
- Relevance to primary prevention and global settings?
Mental Health Treatment to Reduce Transmission Risk Behavior

Mental Health Intervention

Pharmacological Intervention

*Improvements in Mediators:* MH symptoms, Substance use, Stress and coping

Reduced sexual risk behavior

Improved adherence

Reduction in HIV transmission

Reduced viral load

(Sikkema et al., AIBE 2010)
Mental Illness

Depression
Demoralization
Substance abuse
Cognitive impairment
Isolation

Impulsivity
Depression
Demoralization
Substance abuse
Cognitive impairment

HIV/AIDS

Adapted from (Angelino, 2008)
# Prevalence of Mental Health Symptoms/Disorders

<table>
<thead>
<tr>
<th></th>
<th>HCSUS (HIV+)</th>
<th>NHSDA (Gen.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=2,864</td>
<td>N=22,181</td>
</tr>
<tr>
<td>Major depression</td>
<td>36.0%</td>
<td>7.6%</td>
</tr>
<tr>
<td>Dysthymia</td>
<td>26.5%</td>
<td>--</td>
</tr>
<tr>
<td>GAD</td>
<td>15.8%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Panic attack</td>
<td>10.5%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Any drug use</td>
<td>50.1%</td>
<td>10.3%</td>
</tr>
<tr>
<td>Drug dependence</td>
<td>12.5%</td>
<td>--</td>
</tr>
</tbody>
</table>

(Bing et al., 2001)
### Projections of Global Burden of Disease from 1990 to 2020

<table>
<thead>
<tr>
<th>1990</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Respiratory Infection</td>
<td>Ischaemic heart disease</td>
</tr>
<tr>
<td>Diarrhoeal Disease</td>
<td>Depression</td>
</tr>
<tr>
<td>Perinatal Disease</td>
<td>Road Traffic Accidents</td>
</tr>
<tr>
<td>Depression</td>
<td>Cerebrovascular</td>
</tr>
<tr>
<td>Ischaemic Heart Disease</td>
<td>COPD</td>
</tr>
<tr>
<td>Cerebrovascular</td>
<td>Lower Respiratory Infection</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>Tuberculosis</td>
</tr>
<tr>
<td>Measles</td>
<td>War</td>
</tr>
<tr>
<td>Road Traffic Accidents</td>
<td>Diarrhoeal Disease</td>
</tr>
<tr>
<td>Congenital Diseases</td>
<td>HIV</td>
</tr>
<tr>
<td>Malaria</td>
<td>Perinatal Disease</td>
</tr>
<tr>
<td>COPD</td>
<td>Violence</td>
</tr>
<tr>
<td>Falls</td>
<td>Congenital</td>
</tr>
<tr>
<td>Iron-deficiency anemia</td>
<td>Self-inflicted injury</td>
</tr>
<tr>
<td>Protein calorie malnutrition</td>
<td>Bronchial and Lung Cancer</td>
</tr>
</tbody>
</table>

( WHO, 2009 )
Mental Health Associated with Transmission Risk Behavior

- Sexual risk behavior
- Substance use, including injection drug use
- Adherence to ARVs
Mental Health Associated with Sexual Risk Behavior

- 2001 meta-analysis reviewed 23 studies to determine whether emotional states are related to sexual risk behavior in HIV-at-risk populations: (Crepaz & Marks, 2001)
  - Mean effect size .05 (no effect)
  - Not surprising given poor methodology (Kalichman, 2001)

- 2002 review of 61 studies reporting correlates of sexual risk behavior among PLWHA: (Crepaz & Marks, 2002)
  - Inconsistent evidence of an association between sexual risk behavior and mental health (depression, anxiety, anger, life satisfaction, stress, sensation seeking, sexual impulsivity and compulsivity, psychotic symptoms)
  - Challenges of study design and measurement of MH
Effects of Substance Abuse Tx on Sexual Risk Behavior

- 2009 review of substitution treatment of injecting opioid users for drug user and SRB prevention
  - 15 studies reported # of sexual partners, exchanging sex for drugs/money, or unprotected sex
  - Overall, authors reported that limited evidence suggests significant improvement in SRB in substitution treatment groups

(Gowing, Farrell, Bornemann, Sullivan, & Ali, 2009)
2010 review of drug treatment as HIV prevention for injecting and non-injecting drug users:

- Recent studies suggest that SRB interventions delivered *within* drug treatment programs are effective at reducing risk behavior.
- Drug users in substance abuse treatment that offers HIV care are significantly more likely to achieve sustained viral suppression.

(Metzger, Woody, & O’Brien, 2010)
Depression and Adherence

- Meta-analysis of 95 articles (N = 35,029) examining depression and adherence:
  - Depression is consistently associated with nonadherence
  - Incremental association between depressive symptom severity and treatment nonadherence, even if patients do not meet criteria for depression
  - Diagnosis of a depressive disorder was not associated with adherence

(Gonzalez et al., JAIDS, 2011)
Depression and Adherence

- Meta-analysis to examine the relationship between depression and adherence to ARV medication
- N=1,374; merged longitudinal studies; adherence measured by electronic monitoring caps
- Findings:
  - Severe depression is a greater barrier to adherence than mild/moderate depression
  - Cognitive depressive symptoms present a greater challenge to adherence than vegetative symptoms
  - Reduced depression is associated with improved adherence

(Wagner et al., Annals Beh Med epub, 2011)
Mental Health Associated with ARV Adherence

FIG. 1. The association of the number of categories of lifetime traumatic events on the prevalence of antiretroviral nonadherence among CHASE study subjects. $p < 0.01$ pertains to trend test. Nonadherence is defined as patients’ self-report of missing any doses of prescribed antiretroviral medications in the past week.

(Mugavero et al., 2006)
Mental Health Responds to Interventions Among PLWHA

Mental Health Interventions

Pharmacological Interventions
Mental Health Interventions

(Himelhoch et al., 2007)
Mental Health Interventions

- Components of many MH intervention studies are similar
  - Cognitive restructuring & reappraisal
  - Coping skills
  - Stress management

- Limitations:
  - Small sample sizes
  - Primarily white, male, and MSM populations
  - Not measuring important secondary outcomes (sexual risk behavior)
Pharmacological Interventions

<table>
<thead>
<tr>
<th>Study</th>
<th>Standardised mean difference (95% CI)</th>
<th>% Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placebo &lt;33%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Markowitz 1998 TCA</td>
<td>0.44 (-0.12, 1.00)</td>
<td>13.1</td>
</tr>
<tr>
<td>Rabkin 1994 TCA</td>
<td>0.97 (0.48, 1.45)</td>
<td>15.2</td>
</tr>
<tr>
<td>Zisook 1998 SSRI</td>
<td>0.86 (0.26, 1.46)</td>
<td>12.3</td>
</tr>
<tr>
<td>Elliot 1998 SSRI</td>
<td>1.28 (0.57, 1.99)</td>
<td>10.1</td>
</tr>
<tr>
<td>Elliot 1998 TCA</td>
<td>0.51 (-0.12, 1.15)</td>
<td>11.5</td>
</tr>
<tr>
<td>Subtotal</td>
<td>0.80 (0.52, 1.08)</td>
<td>62.2</td>
</tr>
<tr>
<td>Placebo &gt;33%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Targ 1994 SSRI</td>
<td>-0.04 (-0.97, 0.88)</td>
<td>7.0</td>
</tr>
<tr>
<td>Rabkin 1999 SSRI</td>
<td>0.30 (-0.14, 0.74)</td>
<td>16.3</td>
</tr>
<tr>
<td>Rabkin 2004 SSRI</td>
<td>0.16 (-0.35, 0.66)</td>
<td>14.5</td>
</tr>
<tr>
<td>Subtotal</td>
<td>0.20 (-0.11, 0.52)</td>
<td>37.8</td>
</tr>
<tr>
<td>Overall</td>
<td>0.57 (0.28, 0.85)</td>
<td>100.0</td>
</tr>
</tbody>
</table>

(Himelhoch & Medoff, 2005)
<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Population</th>
<th>Intervention</th>
<th>Length of FU</th>
<th>SRB measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kelly et al., 1993</td>
<td>68</td>
<td>Men w/ depression</td>
<td>Group / CBT vs. Support Group (OCI control)</td>
<td>3 months</td>
<td># sexual partners, frequency of unprotected intercourse</td>
</tr>
<tr>
<td>Wyatt et al., 2004</td>
<td>147</td>
<td>Women w/ history of CSA</td>
<td>Group / CBT vs. WL-control</td>
<td>Immediate post</td>
<td>Dichotomized measure of “risk reduction” (condom use)</td>
</tr>
<tr>
<td>Healthy Living, 2007</td>
<td>936</td>
<td>Men &amp; women w/ ≥1 unprotected sex act in last 3 months</td>
<td>Individual / Tailored-CBT vs. WL-control</td>
<td>10 months</td>
<td># unprotected sex acts w/ HIV+ or serostatus UK partner</td>
</tr>
<tr>
<td>Williams et al., 2008</td>
<td>137</td>
<td>AA &amp; Latino MSM w/ history of CSA</td>
<td>Group / SRB skills vs. AC-health promotion</td>
<td>6 months</td>
<td># sexual partners, unprotected intercourse</td>
</tr>
<tr>
<td>Sikkema et al., 2008</td>
<td>247</td>
<td>Men &amp; women w/ history of CSA</td>
<td>Group / Coping skills vs. Support Group (WL-control)</td>
<td>12 months</td>
<td># unprotected intercourse, sex w/ HIV+ or serostatus UK partner</td>
</tr>
</tbody>
</table>
# Adherence to Antidepressants May Improve Adherence to ARVs

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Population</th>
<th>Retrospective Period</th>
<th>Adherence Measures</th>
<th>Depression Tx</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yun et al., 2005</td>
<td>918</td>
<td>HIV+, depressed patients &gt; 12 in Denver, CO</td>
<td>1997-2001</td>
<td>Pick-up of all prescribed meds from Pharmacy</td>
<td>Antidepressants</td>
<td>65% of those receiving tx for MDD had &gt; 95% adherence to ARV, vs. 35% not receiving tx (p=0.01)</td>
</tr>
<tr>
<td>Walkup et al., 2008</td>
<td>406</td>
<td>HIV+, depressed Medicaid patients &gt;18 in NJ</td>
<td>1990-1996</td>
<td>Pick-up of all prescribed meds from Pharmacy</td>
<td>Antidepressants</td>
<td>Previous-month MDD tx increased odds of current-month ARV adherence by 30% (OR=1.28)</td>
</tr>
<tr>
<td>Horberg et al., 2007</td>
<td>1,398</td>
<td>HIV+, depressed Kaiser Permanente patients from 8 US states</td>
<td>2000-2003</td>
<td>Pick-up of all prescribed meds from Pharmacy</td>
<td>SSRIs</td>
<td>&gt;80% adherence to SSRIs increased odds of adherence to ARVs (OR=1.16)</td>
</tr>
</tbody>
</table>
Evidence of MH Interventions Impacting ARV Adherence

2-arm RCT of 12 sessions of CBT for depression + adherence vs. 1-session adherence intervention + letter to MD

<table>
<thead>
<tr>
<th></th>
<th>Post</th>
<th>6-Month FU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CBT-AD</td>
<td>Control</td>
</tr>
<tr>
<td>MEMS(^1)</td>
<td>44%</td>
<td>14%</td>
</tr>
<tr>
<td>BDI(^2)</td>
<td>-11</td>
<td>-4</td>
</tr>
</tbody>
</table>

all results p<0.05\(^1\) >95% Adherence \(^2\) Mean Change in Score

(Safren et al., 2009)
Integrated Behavioral Intervention Improves ARV Adherence

(N = 217)

(Kalichman et al., 2011)
Integrated Behavioral Intervention Reduces Sexual Risk

Unprotected Intercourse

- Condition p<.01
- Time p<.001
- Condition x Time p<.001

Safer Sex Strategies

- Condition p<.01

(Vaginal)

- Condition p<.01
- Time p<.001

(Anal)

- Condition p<.05
- Time p<.001

(Kalichman et al., 2011)
Living In the Face of Trauma

An Intervention for Coping with HIV and Trauma

Kathleen J. Sikkema, Ph.D. and the LIFT Project Team

Duke University
Department of Psychology and Neuroscience

© 2009 KJ Sikkema, A Kochman, JJ van den Berg, NB Hansen, MH Watt
LIFT General Goals

- Evaluate effectiveness of secondary prevention intervention for HIV+ women & men with history of sexual trauma to:
  - Reduce psychiatric distress, primarily trauma symptoms
  - Reduce substance use and sexual risk behavior
  - Increase health protective behaviors
Coping Intervention Model

(Folkman et al., 1991)
Intervention Overview

- 15 weekly 90-minute group sessions
- Led by two co-therapists
- Separate groups for:
  - Women
  - Gay & bisexual men
  - Heterosexual men
**Intervention Overview**

- **Trauma Specific Components**
  - Exposure
  - Connecting memory with narrative
  - Connecting trauma with behavior
  - Mindfulness/relaxation training

- **Cognitive-behavioral Components**
  - Identifying and appraising specific stressors
  - Identifying specific coping strategies
  - Modeling/role-playing coping strategies
  - Learning meta-cognitive skills

- **Interpersonal Components**
  - Sharing personal experiences
  - Creating connections for support
Recognition of LIFT as “Best Evidence”

BEST-EVIDENCE

Living in the Face of Trauma (LIFT)

Intervention Description

Target Population
HIV-positive adults with childhood sexual abuse (CSA) histories

Goals of Intervention

- Eliminate or reduce sexual transmission risk behavior
- Improve coping with the combined stressors of HIV infection and child sexual abuse
- Increase positive change in CSA-related trauma symptoms
Living in the Face of Trauma (LIFT): An Intervention for Coping With HIV and Trauma

Date of Review: December 2010

Living in the Face of Trauma (LIFT): An Intervention for Coping With HIV and Trauma is a group intervention that focuses on improving the coping abilities of individuals—women of any sexual orientation and men who have sex with men—who have HIV and a history of childhood sexual abuse. LIFT promotes better health protective decisionmaking with the goals of reducing the symptoms of traumatic stress and the risk of transmitting HIV, as well as the risk for substance abuse, a common experience among these populations.

LIFT therapists use a cognitive behavioral approach to help clients develop and maintain healthy relationships and protective health behaviors such as substance use reduction, protected sexual intercourse, increased patient-provider communication, and HIV treatment adherence. Since a key element of the intervention is to provide a supportive and safe treatment environment, LIFT groups are composed of same-gender clients, usually with a similar sexual orientation. Significant time in each session is devoted to sharing personal experiences of HIV infection and childhood trauma, allowing clients to offer each other support and feedback. LIFT therapists guide clients in identifying traumatic stress parallels (e.g., feeling powerless) between their HIV diagnosis and childhood sexual abuse. Past and present coping methods such as alcohol and drug use are discussed with the group, and healthy coping strategies are offered and then practiced during group role-plays and as homework. LIFT is manual driven and consists of 15 90-minute sessions delivered weekly by two cotherapists to groups of about 10 clients each.
Screening and Random Assignment

1. Baseline
2. Coping Group Intervention
3. Post
4. 4-mo Follow up
5. 8-mo Follow up
6. 12-mo Follow up

1. Baseline
2. Support Group Intervention
3. Post
4. 4-mo Follow up
5. 8-mo Follow up
6. 12-mo Follow up

1. Baseline
2. Wait List Control Group
3. Baseline
4. Coping Group Intervention
5. Post
6. 4-mo FU
7. 8-mo FU
8. 12-mo FU

1. Baseline
2. Support Group Intervention
3. Baseline
4. Support Group Intervention
5. Post
6. 4-mo FU
7. 8-mo FU
8. 12-mo FU

Study Design
Baseline: Demographics

N = 257

**Gender**
- Female: 48%
- Male: 50%
- Transgender: 2%

**Age** (average years)
- 42.3

**Years since Diagnosis**
- 9

**Race/Ethnicity**
- African-American: 72%
- Hispanic/Latino: 16%
- White: 11%
- Other: 4%
# Sexual Abuse Histories

<table>
<thead>
<tr>
<th>Sexual Abuse Characteristic</th>
<th>Childhood (N = 239)</th>
<th>Adolescent (N = 202)</th>
<th>Adult (N = 147)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unwanted touching</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>89%</td>
<td>69%</td>
<td>38%</td>
</tr>
<tr>
<td>Female</td>
<td>89%</td>
<td>81%</td>
<td>60%</td>
</tr>
<tr>
<td>Unwanted oral sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>69%</td>
<td>58%</td>
<td>40%</td>
</tr>
<tr>
<td>Female</td>
<td>44%</td>
<td>46%</td>
<td>48%</td>
</tr>
<tr>
<td>Unwanted vaginal/anal sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>72%</td>
<td>58%</td>
<td>38%</td>
</tr>
<tr>
<td>Female</td>
<td>67%</td>
<td>72%</td>
<td>63%</td>
</tr>
</tbody>
</table>
## Baseline: Risk Characteristics

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTSD (current)</td>
<td>40%</td>
</tr>
<tr>
<td>Homelessness (ever)</td>
<td>66%</td>
</tr>
<tr>
<td>Incarceration (ever)</td>
<td>43%</td>
</tr>
<tr>
<td>Sex Trade (ever)</td>
<td>49%</td>
</tr>
<tr>
<td>Substance Abuse Tx (past 4 mo)</td>
<td>34%</td>
</tr>
<tr>
<td>Psychiatric Meds (past 4 mo)</td>
<td>39%</td>
</tr>
</tbody>
</table>

N=257
Baseline: High Rates of Sexual Risk

In the four months prior to enrollment:

- 51% of men and 30% of women engaged in any unprotected sex
- 34% of men and 26% of women reported unprotected anal or vaginal sex
- 27% of men and 15% of women reported unprotected anal or vaginal sex with HIV negative partner
## Predictors of High Risk Sexual Behavior

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>O.R.</th>
<th>C.I.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Block 1:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>1.51</td>
<td>(0.66 – 3.47)</td>
</tr>
<tr>
<td><strong>Block 2:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coping Scales:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active Coping</td>
<td>0.43*</td>
<td>(0.19 – 0.95)</td>
</tr>
<tr>
<td>HIV-Related Shame:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact of Shame on Behavior</td>
<td>3.22*</td>
<td>(1.22 – 8.50)</td>
</tr>
<tr>
<td>Trauma Symptom Inventory:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavioral Difficulties</td>
<td>1.87*</td>
<td>(1.03 – 3.40)</td>
</tr>
</tbody>
</table>

*p < 0.05

^a^ Nagelkerke $R^2 = 0.24$, 69.2% of participants correctly classified.

(Sikkema et al, *Arch Sex Beh*, 2009)
Study Participation

- **Assessment Completion**
  - 75.7% (187) completed at least 2 assessments
  - 72.1% (178) completed at least 3 assessments
  - No difference between conditions

- **Group Session Attendance**
  - 57.9% (143) attended 10+ sessions
  - 20.2% (50) attended 3-9 sessions
  - No difference between conditions
Impact on Sexual Behavior

Unprotected vaginal/anal sex with all partners

- Frequency

Baseline, Post, 4-mo. FU, 8-mo. FU, 12-mo. FU

Coping Group
Support Group

all p < .001
Impact on Sexual Behavior

Unprotected vaginal/anal sex with HIV-negative and HIV-unknown partners

Frequency

Baseline | Post | 4-mo. FU | 8-mo. FU | 12-mo. FU

Coping Group | Support Group

Unprotected vaginal/anal sex with HIV-negative and HIV-unknown partners
Longitudinal Modeling of Unprotected Vaginal/Anal Intercourse Over Time

<table>
<thead>
<tr>
<th></th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All partners</td>
</tr>
<tr>
<td>Time</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Time * Intervention</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Gender</td>
<td>.97</td>
</tr>
</tbody>
</table>

(Sikkema et al. JAIDS, 2008)
Impact on Substance Use: Any Cocaine Use

\[ \chi^2 = 9.81, \text{ df}=3, p=0.04 \]

(Meade et al., *Addiction*, 2010)
Impact on Substance Use: Mean Frequency of Alcohol Use

\( \chi^2 = 10.774, \text{ df}=3, p=0.029 \)

(Meade et al., *Addiction*, 2010)
Coping Mediates Traumatic Stress Outcomes
(Sikkema at al., under review)

**Coping**
- Baseline Assessment (n=124)
  - Attended 8+ sessions (n=84)
  - Attended Post Assessment (n=79)
    - Attended Follow-up 1 (n=80)
    - Attended Follow-up 2 (n=77)
    - Attended Follow-up 3 (n=74)
  - Analyzed (n=84)

**Support**
- Baseline Assessment (n=123)
  - Attended 8+ sessions (n=80)
  - Attended Post Assessment (n=77)
    - Attended Follow-up 1 (n=74)
    - Attended Follow-up 2 (n=74)
    - Attended Follow-up 3 (n=69)
  - Analyzed (n=80)
Research Question

- Did change in avoidant coping mediate effect of Coping Intervention on change in traumatic stress?
- Did groups differ on traumatic stress over time? [c path]
- Did groups differ on avoidant coping over time? [a path]
- Were changes in avoidant coping related to changes in traumatic stress? [b path]
Measures

- **Traumatic Stress** (outcome)
  - *Symptoms* in *past month* related to sexually traumatic experience (*intrusive thoughts, nightmares, intrusive feelings, numbing of responsiveness, avoidance of feelings and situations*); Response scale: 0 (not at all) to 5 (often)

- **Avoidant Coping** (mediator)
  - *Strategies* used in the *past month* to cope with stress of HIV infection and history of CSA (*criticized self, kept feelings to self, made self feel better by eating, drinking, smoking, using drugs or medication, planned ways to kill self*); Response scale: 0 (never) to 3 (often)
Analytic Approach

- Use Latent Growth Curve Modeling to examine slope/change over time
- Controlled for baseline differences
- Used all available data
  - Little missing data (C=12%, S=14% at FU3)
- Controlled for ICC/non-independence due to group-based intervention
Traumatic Stress Over 5 Time Points

Coping
Support
Total Effect of Intervention on Traumatic Stress

Intervention
1 = Coping
0 = Support

Initial Status Traumatic Stress

Growth Traumatic Stress

Initial Status

Growth

B
P
F1
F2
F3

c path
-.44 (.12) p<.001

.21 (.08) p<.05
Mediation Model

Initial Status
  Avoidant Coping
  \[ \beta = 0.77 \]
  \[ \beta = 0.70 \]
  \[ \beta = 0.71 \]

Growth
  Avoidant Coping
  \[ \beta = 0.98 \]
  \[ \beta = 0.28 \]
  \[ c' = -0.06 \]

Intervention
  \[ \beta = 0.12 \]

Traumatic Stress
  \[ \beta = 0.78 \]

\[ a = -0.28 \] \( p < 0.05 \)
\[ b = 0.98 \] \( p < 0.001 \)
\[ c' = -0.06 \] \( p = ns \)
Results

- Coping demonstrated greater reduction in traumatic stress over time than did Support
- Coping reported lower use of avoidant coping strategies over time than did Support
- Results support hypothesis that reduction in use of avoidant coping completely mediated effect of intervention on traumatic stress
- Proportion mediated = \( \frac{ab}{c} = 0.82 \)
Conclusions Regarding Mediation

- Interventions aimed at reducing traumatic stress in PLWHA and CSA should target avoidant coping strategies.
- LIFT program components aimed at reducing the use of avoidant coping strategies should be considered.
- Mediation analyses aid in our understanding of how interventions lead to change.
Directions for Future Research

ELIGIBLE PARTICIPANTS

Integrated: Mental health, coping, risk reduction and adherence
Mental Health and Coping
Risk Reduction
Adherence
Directions for Future Research

Study design

- Comparison group: time matched control for potential efficacy vs. available treatment (no treatment or waitlist as unethical)
- Sequential vs. integrated components
- Inclusion criteria to match primary outcome (e.g., depression as inclusion with risk behavior as outcome?)
- What is most appropriate primary outcome?
- Address potential bias in self-reported outcomes
  - Adherence: validate with pill count or MEMS
  - Sexual behavior: supplement with STI incidence
Mental Health Treatment: HIV Primary Prevention? Adaptation to Global Setting?
Mental Health and HIV Sexual Risk in South Africa

(Alcohol-Related HIV Risks among South African Women, NIAAA R01 AA018074 Kalichman and Sikkema)

<table>
<thead>
<tr>
<th>Structural</th>
<th>Social</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews with community KIs</td>
<td>Observations of interaction patterns</td>
<td>Prospective cohort of women recruited from venue</td>
</tr>
<tr>
<td>Venue mapping</td>
<td>Venue-based interviews</td>
<td></td>
</tr>
<tr>
<td>Interviews with owners, managers, servers</td>
<td>Venue-based repeated cross sectional surveys</td>
<td></td>
</tr>
<tr>
<td>Monitoring community-level STIs and VCT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Mental Health and HIV Sexual Risk in South Africa

- Peri-urban township of Cape Town
- 6 alcohol-serving venues (shebeens and taverns)
- N = 738 women and men
- Measures
  - Drinking frequency/quantity (AUDIT)
  - Depression (PHQ-2)
  - PTSD
  - Sexual Behavior in past 4 months

(Sikkema et al., JAIDS, 2011)
# Mental Health and HIV Sexual Risk in South Africa

**TABLE 5. Summary of Models Predicting Number of Unprotected Sexual Intercourse Occasions**

<table>
<thead>
<tr>
<th></th>
<th>Men (n = 349)*</th>
<th>Women (n = 321)†</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RR (95% CI)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td>1.09 (0.82 to 1.46)</td>
<td>0.92 (0.70 to 1.20)</td>
</tr>
<tr>
<td>Age</td>
<td>1.02 (1.00 to 1.03)</td>
<td>0.99 (0.98 to 1.00)</td>
</tr>
<tr>
<td>Alcohol frequency</td>
<td>1.26 (1.13 to 1.41)</td>
<td>1.18 (1.04 to 1.33)</td>
</tr>
<tr>
<td>Alcohol quantity</td>
<td>1.19 (1.10 to 1.30)</td>
<td>1.26 (1.14 to 1.39)</td>
</tr>
<tr>
<td>Any drug use</td>
<td>1.72 (1.27 to 2.32)</td>
<td></td>
</tr>
<tr>
<td>Screen for depression</td>
<td>1.07 (0.83 to 1.38)</td>
<td>1.33 (0.93 to 1.91)</td>
</tr>
<tr>
<td><strong>PTSD score</strong></td>
<td>1.15 (1.08 to 1.24)</td>
<td>1.53 (1.13 to 2.09)</td>
</tr>
<tr>
<td><strong>Wald χ²</strong></td>
<td>0.34</td>
<td>0.38</td>
</tr>
<tr>
<td><strong>P</strong></td>
<td>0.560</td>
<td>0.536</td>
</tr>
</tbody>
</table>

*Model fit: Likelihood χ² 84.66, df 7, P < 0.001.
†Model fit: Likelihood χ² 77.69, df 7, P < 0.001.

CI, confidence interval; RR, relative rate.

(Sikkema et al., JAIDS, 2011)
Mental Health Treatment to Reduce Transmission Risk Behavior

- Mental Health Intervention
  - Improvements in Mediators: MH symptoms, Substance use, Stress and coping
- Pharmacological Intervention
  - Reduced sexual risk behavior
  - Improved adherence
  - Reduction in HIV transmission
  - Reduced viral load

(Sikkema et al., AIBE 2010)
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