Impacts and Correlates of Sub-Optimal Social Support Among Patients in HIV Care

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I have no conflicts of interest to disclose.
Why social support?

Sufficient Social Support is associated with:

• Resilience to illness\(^1\)
• Support for healthful behaviors\(^1\)
• Decreased morbidity and mortality\(^2\)

Insufficient Social Support is associated with:

• Poor mental health\(^3\)
• Compromised immune, cardiac, endocrine function\(^2\)
• Poor engagement in care\(^3\)

Considerations for HIV: stigma, aging population, chronic condition

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\(^1\) Cohen S, Wills TA. Stress, social support, and the buffering hypothesis. *Psychol Bull*. 1985


Methods: Population

University of Washington
University of California San Francisco
Case Western Reserve University
University of North Carolina at Chapel Hill
University of California San Diego
University of Alabama at Birmingham
Fenway Health
Johns Hopkins University
Methods: Procedure

- Multifactoral Assessment of Perceived Social Support (MAPSS)
  - 8-Item validated questionnaire
  - Developed by group through through PCORI PRO development grant (PIs: H. Crane, P. Crane, Fredericksen, SC14-1403-14081).
  - Self-administered as part of clinical Patient-Reported Outcomes Assessment—approx. 12 minute battery of PRO items on touch screen tablet
- Other domains: depression, substance use, nicotine use, adherence, HIV Stigma, sexual risk behavior, intimate partner violence
- Linked to clinical and demographic data
- Data collection: cross-sectional January – August 2017
MAPSS Instrument

- How much do you feel loved, liked, or cared about?
- How much do you feel that you can trust those in your personal life?
- How much do you feel listened to by those in your personal life?
- How much do you feel that people in your personal life support your ability to stay healthy?
- How much do you feel accepted for who you are by those important to you?
- How much do you feel that there are people in your life who understand your problems?
- How much do you feel that there are people who would help you if you needed help?
- How satisfied are you with the kinds of relationships you have with your family and friends?

Two Response options: “Enough or more than enough” or “not enough”
Methods: Analysis

• Respondents were categorized into 3 groups
  • High Social Support: 8 points
  • Medium Social Support: 4-7 points
  • Low Social Support: 0-3 points
  • “Suboptimal”: <8 points

• Univariate and Multivariate ordinal logistic regression models
  • Multivariate: Poisson regressions with robust standard errors to obtain incidence rate ratios (IRR)
  • High SS used as reference category
## Results: Demographics

<table>
<thead>
<tr>
<th>Race</th>
<th>Total (n=708)</th>
<th>Low (0-3pts)</th>
<th>Medium (4-7 pts)</th>
<th>High (8 pts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>502 (74%)</td>
<td>75 (74%)</td>
<td>106 (76%)</td>
<td>321 (73%)</td>
</tr>
<tr>
<td>Non-White</td>
<td>178 (26%)</td>
<td>27 (27%)</td>
<td>34 (24%)</td>
<td>117 (27%)</td>
</tr>
<tr>
<td>Hispanic, self-reported</td>
<td>n=703</td>
<td>Yes</td>
<td>210 (30%)</td>
<td>28 (27%)</td>
</tr>
<tr>
<td>Non</td>
<td>493 (70%)</td>
<td>76 (73%)</td>
<td>107 (74%)</td>
<td>310 (68%)</td>
</tr>
<tr>
<td>Age</td>
<td>n=708</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;30</td>
<td>46 (7%)</td>
<td>6 (6%)</td>
<td>12 (8%)</td>
<td>28 (6%)</td>
</tr>
<tr>
<td>30–39</td>
<td>144 (20%)</td>
<td>27 (26%)</td>
<td>24 (16%)</td>
<td>93 (20%)</td>
</tr>
<tr>
<td>40–49</td>
<td>175 (25%)</td>
<td>28 (27%)</td>
<td>41 (28%)</td>
<td>106 (23%)</td>
</tr>
<tr>
<td>50+</td>
<td>343 (48%)</td>
<td>44 (42%)</td>
<td>69 (47%)</td>
<td>230 (50%)</td>
</tr>
<tr>
<td>Gender</td>
<td>n=704</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>591 (84%)</td>
<td>82 (78%)</td>
<td>125 (86%)</td>
<td>384 (85%)</td>
</tr>
<tr>
<td>Female</td>
<td>101 (14%)</td>
<td>20 (19%)</td>
<td>19 (13%)</td>
<td>62 (14%)</td>
</tr>
<tr>
<td>Trans or other</td>
<td>12 (2%)</td>
<td>3 (3%)</td>
<td>2 (2%)</td>
<td>7 (2%)</td>
</tr>
<tr>
<td>Self-described sexual orientation</td>
<td>n=703</td>
<td>Lesbian, gay, or homosexual</td>
<td>464 (66%)</td>
<td>61 (58%)</td>
</tr>
<tr>
<td>Straight or heterosexual</td>
<td>158 (23%)</td>
<td>27 (26%)</td>
<td>31 (21%)</td>
<td>100 (22%)</td>
</tr>
<tr>
<td>Bisexual</td>
<td>54 (8%)</td>
<td>10 (10%)</td>
<td>14 (10%)</td>
<td>30 (7%)</td>
</tr>
<tr>
<td>Something else</td>
<td>27 (4%)</td>
<td>7 (7%)</td>
<td>4 (3%)</td>
<td>16 (4%)</td>
</tr>
<tr>
<td>Survey language</td>
<td>n=708</td>
<td>Spanish</td>
<td>136 (19%)</td>
<td>15 (14%)</td>
</tr>
<tr>
<td>English</td>
<td>572 (81%)</td>
<td>90 (86%)</td>
<td>125 (86%)</td>
<td>357 (78%)</td>
</tr>
</tbody>
</table>

*p=0.015*
Results: HIV- Specific Outcomes

- **Adherence: good-excellent**
  - Detectable: Low (0-3 pts), Medium (4-7 pts), High (8 pts)
  - Undetectable: Low (0-3 pts), Medium (4-7 pts), High (8 pts)

- **Engaged in Care**
  - Detectable: Low (0-3 pts), Medium (4-7 pts), High (8 pts)
  - Undetectable: Low (0-3 pts), Medium (4-7 pts), High (8 pts)

- **Not Engaged in Care**
  - Detectable: Low (0-3 pts), Medium (4-7 pts), High (8 pts)
  - Undetectable: Low (0-3 pts), Medium (4-7 pts), High (8 pts)

- **Undetectable**
  - Detectable: Low (0-3 pts), Medium (4-7 pts), High (8 pts)
  - Undetectable: Low (0-3 pts), Medium (4-7 pts), High (8 pts)

- **Detectable**
  - Detectable: Low (0-3 pts), Medium (4-7 pts), High (8 pts)
  - Undetectable: Low (0-3 pts), Medium (4-7 pts), High (8 pts)

**Significance Levels**:
- p=0.01
- p<0.001
- p=0.031
Results: Substance Use

- **Current Smoke/Vape**
  - No Current Smoke/Vape: [Bars with percentages]
  - Current Smoke/Vape: [Bars with percentages]
  - Significance: p=0.005

- **Current Marijuana Use**
  - No Current Marijuana Use: [Bars with percentages]
  - Current Marijuana Use: [Bars with percentages]
  - Significance: p=0.012

- **Current Methamphetamine Use**
  - No Current Methamphetamine Use: [Bars with percentages]
  - Current Methamphetamine Use: [Bars with percentages]
  - Significance: p<0.001

- **Any Current Illicit Drug Use**
  - No Current Illicit Drug Use: [Bars with percentages]
  - Any Current Illicit Drug Use: [Bars with percentages]
  - Significance: p=0.001

- **High Risk Alcohol Use**
  - No Current Alcohol Use: [Bars with percentages]
  - Moderate Alcohol Use: [Bars with percentages]
  - High Risk Alcohol Use: [Bars with percentages]
  - Significance: p=0.651

Legend:
- High (8 pts)
- Medium (4-7 pts)
- Low (0-3 pts)
Results: HIV Transmission Risks

Concern for STI Exposure

Sex Partners in last 3 mo: ≥6
- High (8 pts)
- Medium (4-7 pts)
- Low (0-3 pts)

Sex Partners in last 3 mo: 2-5
- High (8 pts)
- Medium (4-7 pts)
- Low (0-3 pts)

Sex Partners in last 3 mo: 1
- High (8 pts)
- Medium (4-7 pts)
- Low (0-3 pts)

Sex Partners in last 3 mo: 0
- High (8 pts)
- Medium (4-7 pts)
- Low (0-3 pts)

No Concern for STI Exposure

Sex Partners in last 3 mo: ≥6
- High (8 pts)
- Medium (4-7 pts)
- Low (0-3 pts)

Sex Partners in last 3 mo: 2-5
- High (8 pts)
- Medium (4-7 pts)
- Low (0-3 pts)

Sex Partners in last 3 mo: 1
- High (8 pts)
- Medium (4-7 pts)
- Low (0-3 pts)

Sex Partners in last 3 mo: 0
- High (8 pts)
- Medium (4-7 pts)
- Low (0-3 pts)

p=0.001

p=0.008
## Results: Mental Health

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Low (0-3pts)</th>
<th>Medium (4-7 pts)</th>
<th>High (8 pts)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health-related QOL (VAS)</td>
<td>66 (47-80)</td>
<td>75 (61-90)</td>
<td>86 (70-95)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>EQ5D</td>
<td>7 (6-8.5)</td>
<td>6 (5-7)</td>
<td>5 (5-7)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>PHQ-9</td>
<td>8.5 (5-15)</td>
<td>6 (2-11)</td>
<td>2 (0-5)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>HIV stigma</td>
<td>2.5 (1.5-3.5)</td>
<td>2 (1.5-3)</td>
<td>1 (1-2)</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

Mean score per instrument by level of social support
## Results: Multivariate Analysis

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Covariates</th>
<th>Model IRR (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>Substance Use, Alcohol Use, Viral Load, CD4, Sexually active yes/no</td>
<td>Anagnostopoulos 2015</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>1.0 (reference)</td>
<td>2.59 (2.00, 3.36)</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>3.72 (2.93, 4.72)</td>
</tr>
<tr>
<td>Poor Engagement in Care</td>
<td>Depression, Substance Use</td>
<td>Hightow-Weidman 2017</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>1.0 (reference)</td>
<td>1.62 (1.15, 2.29)</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>2.05 (1.44, 2.96)</td>
</tr>
<tr>
<td>Number of symptoms (4 categories)</td>
<td>Viral Load, CD4</td>
<td>Lee 2009</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>1.0 (reference)</td>
<td>1.75 (1.44, 2.13)</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>2.29 (1.92, 2.75)</td>
</tr>
<tr>
<td>Adherence (4 categories)</td>
<td>Depression, Substance Use</td>
<td>Skalski 2015</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>1.0 (reference)</td>
<td>0.91 (0.81, 1.01)</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>0.76 (0.64, 0.89)</td>
</tr>
<tr>
<td>Health-Related QOL (4 categories)</td>
<td>Depression, Substance Use, CD4, Bothersome Symptoms</td>
<td>Armon 2012</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>1.0 (reference)</td>
<td>0.97 (0.89, 1.05)</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>0.86 (0.75, 0.97)</td>
</tr>
<tr>
<td>Health-Related QOL (4 categories)</td>
<td>Depression, Substance Use, Viral Load, CD4</td>
<td>Castro 2018</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>1.0 (reference)</td>
<td>0.97 (0.89, 1.06)</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>0.85 (0.75, 0.97)</td>
</tr>
<tr>
<td>Recent drug use</td>
<td>Depression, HRQOL</td>
<td>Lightfoot 2005</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>1.0 (reference)</td>
<td>1.11 (0.84, 1.46)</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>1.11 (0.81, 1.52)</td>
</tr>
<tr>
<td>Recent Viral Load Undetectable</td>
<td>Depression, Substance Use, Alcohol Use, HIV Stigma, Adherence, Engagement in Care</td>
<td>Rangarajan 2016</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>1.0 (reference)</td>
<td>1.01 (0.93, 1.10)</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>0.98 (0.89, 1.09)</td>
</tr>
</tbody>
</table>
What does this mean?

• Strong associations between levels of perceived social support and health outcomes
  • Relevance to HIV-specific outcomes and transmission risks
  • Next steps: investigation of vulnerable populations

• Modifiable health behaviors are key correlates
  • Mechanism and direction of influence undetermined
  • Next steps: longitudinal and qualitative studies

• Systematic assessment of social support in HIV care may help identify patients at risk for poorer outcomes
  • Patients may benefit from additional intervention.
  • Next Steps: clinical integration
Acknowledgements

We thank our patients, as well as the Madison Clinic Patient Panel for guidance in domain selection and development of the measure.

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