Published in final edited form as:

AIDS Care. 2016 ; 28(3): 347–353. doi:10.1080/09540121.2015.1096894.

Trauma symptoms, internalized stigma, social support, and sexual risk behavior among HIV-positive gay and bisexual MSM who have sought sex partners online

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Abstract

Gay, bisexual, and other men who have sex with men (MSM) remain the highest risk group for HIV infection. One reason is the increased use of the Internet to meet potential sex partners, which is associated with greater sexual risk behavior. To date, few studies have investigated psychosocial predictors of sexual risk behavior among gay and bisexual men seeking sex partners online. The purpose of the current study was to test a conceptual model of the relationships between trauma symptoms indexed on the event of HIV diagnosis, internalized HIV stigma, and social support on sexual risk behavior among gay and bisexual MSM who seek sex partners online. A sample of 142 gay and bisexual MSM recruited on- and offline completed a comprehensive online assessment battery assessing the factors noted above. A number of associations emerged; most notably internalized HIV stigma mediated the relationship between trauma-related symptoms indexed on the event of HIV diagnosis and sexual risk behavior with HIV-negative and unknown serostatus sex partners. This suggests that gay and bisexual MSM who are in greater distress over their HIV diagnosis and who are more sensitive to HIV stigma engage in more HIV transmission risk behavior. As sexual risk environments expand with the increasing use of the Internet to connect with others for sex, it is important to understand the predictors of sexual risk behavior so that tailored interventions can promote sexual health for gay and bisexual MSM seeking sex online.

Keywords

gay/bisexual MSM; trauma; internalized HIV stigma; social support; sexual risk behavior; Internet

The Internet is a common venue to meet sex partners and companions, and it allows for meeting a great number of people in a wide geographical range while retaining anonymity. However, meeting people online for sex has been associated with higher rates of sexual risk behavior, HIV and STI transmission (Bentosch, Kalichman, & Cage, 2002; Halkitis & Parsons, 2003; Bull, McFarlane, Lloyd, & Rietmeijer, 2004; Grov & Crow, 2012). Upon comparing retrospective reports and daily diary data on sexual risk behavior in a sample of MSM who seek sex online, Mustanski (2007) concluded that men who are more likely to engage in risky sexual behavior are more likely to use the Internet to seek out sex partners.

Therefore the Internet is an important venue to engage individuals with riskier sexual practices that could lead to HIV transmission. This is particularly relevant for gay and bisexual MSM, who account for over half of the existing cases of HIV in the United States and remain the highest risk group for HIV transmission (CDC, 2012).

The negotiation of sexual behaviors with partners met online is influenced by psychosocial factors (e.g. depression, sexual compulsivity; Halkitis & Parsons, 2003; Kalichman, Cherry, Cain, Pope, & Kalichman, 2005). No studies, to date, have examined how other relevant psychosocial factors, such as trauma symptoms, HIV-related stigma, and social support impact sexual risk taking in a sample of men who have met sex partners online.

Trauma disproportionately affects men living with HIV/AIDS (Kamen, et al., 2012). The association between trauma and higher rates of sexual risk behavior has been established in the literature (Kamen, et al., 2013; Radcliffe, Beidas, Hawkins, & Doty, 2011; Gore-Felton & Koopman, 2002). Trauma symptoms (i.e., intrusion, avoidance, and hypervigilance indexed on a potentially life-threatening event) have been explored following HIV diagnosis (Martin & Kagee, 2011; Theuninck, Lake, & Gibson, 2010). These symptoms may be best understood in a shame-based trauma framework (Lee, Scragg, & Turner, 2001). Indeed, people who are diagnosed with HIV face a number of social and psychological consequences, including HIV-related stigma and discrimination (Katz & Nevid, 2005), which may exacerbate the effects that trauma symptoms have on sexual risk behaviors and health.

Men report that HIV stigma in the gay community leads to fear of rejection by sex partners (Courtenay-Quirk, et al., 2006). Internalized stigma, the extent to which individuals believe negative thoughts and feelings about people living with HIV about themselves, has been associated with lower rates of disclosure of HIV status to sexual partners (Overstreet, Earnshaw, Kalichman, & Quinn, 2013). Internalized HIV stigma has been associated with sexual risk behavior, more so than enacted stigma or anticipated stigma (Earnshaw & Chadoir, 2009).

Social support, the extent to which supportive relationships are present and emotionally validating, can be protective in the adjustment to living with HIV/AIDS (Turner-Cobb, et al., 2002). Social support has been related to a number of health-related behaviors including sexual risk behavior (Kimberly, & Serovich, 1999). In a study on potential motivators to engage in intentional unprotected sex, MSM reported engaging in unprotected sex to cope with stressors and to promote connection with other men (Bauermeister, Carballo-Diequez, Ventuneac, & Dolezal, 2009).

Considering the impact of trauma and HIV-related stigma on MSM who are living with HIV along with the potential role of social support, it is relevant to examine the relationships among these variables on men seeking sex partners online who may engage in riskier sexual behavior. In the present study, we aimed to clarify these associations by testing a conceptual model, illustrated in Figure 1. We hypothesized that internalized stigma may account for the relationship between trauma-related symptoms and sexual risk. We further hypothesized that social support would play a mediating role between trauma symptoms and transmission risk

behavior (defined in this study as condomless anal sex with HIV-negative and unknown serostatus sexual partners).

Methods

Participants

We recruited a sample of 170 men living with HIV/AIDS. Participants 1) were over 18 years of age; 2) self-identified their sexual orientation as gay, homosexual or bisexual; 3) were HIV-positive; 4) reported they had ever sought a sex partner online; and 5) reported they had ever engaged in UAI with a male partner either as an insertive or receptive partner.

Procedure

Participants were recruited from across the United States using online and offline methods. Online, ads were posted on Craigslist each day in different cities within the Eastern and Central time zones; a banner advertisement was placed on a popular gay dating website (BlackGayChat); and classified ads were placed in online boards that cater to LGBT and HIV-positive communities (Edge, [TheBody.com](#), AIDS connect, Yahoo Groups). Offline, study staff emailed flyers to directors of LGBT and HIV/AIDS service organizations. Individuals called the screening phone line to determine study eligibility. Eligible participants were given a unique screening ID and they provided their email address to receive study-related materials. Once a participant consented to participate in the study they were emailed a link to their confidential survey administered using LimeSurvey (LimeSurvey, 2011), a free, open-source web application installed on our secure server. Access to the survey was controlled through the use of tokens that were assigned to individual participants when they logged into their survey. Participants had a two-week window to complete their survey, and were encouraged to finish it within a 24-hour period. The survey consisted of self-report measures that took approximately 60-90 minutes to complete. Participants were compensated \$25 for their time.

Measures

Demographic and Health Information—Demographic information was collected from participants including their age, ethnicity/race, education, employment, income, sexual orientation, and relationship status. Health information was also collected including self-reported date of HIV-diagnosis, date and result of most recent CD4 cell count, viral load status, and current HIV-related symptoms.

Trauma-Related Symptoms—PTSD symptoms were evaluated using the Impact of Event Scale – Revised version (IES-R; Weiss, Marmar, 1997). The IES-R is a 22-item self-report measure of subjective distress related to a specific life event. Participants were asked to report on their distress over the past week related to HIV diagnosis. The IES-R assesses symptoms of hyperarousal, intrusion and avoidance to yield a total score. Reliability of the IES-R was good in the present sample. (Chronbach $\alpha = .96$).

Internalized HIV Stigma—Internalized HIV stigma was measured using the 28-item Internalized HIV Stigma scale (Sayles, et al., 2008). To calculate the overall mean

internalized HIV stigma score, participants' responses are converted to scores of 1-100 and averaged for each of the four factors (stereotypes, disclosure concerns, social relationships, self-acceptance); then the mean of the 4 subscale scores was calculated (Chronbach $\alpha = .93$).

Social Support—Perceived social support was assessed using the Social Support Questionnaire (Brock, Sarason, Sarason, & Pierce, 1996). This 15-item self-report measure assessed the availability and validation of supportive relationships. Higher scores indicated greater levels of social support (Chronbach $\alpha = .88$).

Sexual Risk Behavior—Sexual risk behavior was measured by asking participants the number of men they had anal sex with in the past six months by partner serostatus category (HIV-positive, HIV-negative, and unknown serostatus). For each partner serostatus category, participants reported how many times they engaged in anal sex in past six months, either as the receptive or insertive partner. Of their sexual encounters participants reported on how many occasions a condom was not used (UAI) and how many times a condom was used. This approach to assessing sexual risk behavior has been widely used (e.g. Sikkema, Hansen, Meade, Kochman, & Fox, 2009; Kalichman, Gore-Felton, Benotsch, Cage & Rompa, 2004; Benotsch, Kalichman, & Cage, 2002). An open response format was used so participants could freely enter a number of partners and sexual encounters to control for response bias, and this format has demonstrated increased reliability of self-report (Kalichman, et al., 1997). LimeSurvey was set so that the survey would track participants' past responses to aid their recall for each question.

Sexual behavior variables tend to be non-normally distributed and positively skewed. To ensure that relationships between study variables with sexual risk behavior were not outcomes based on a small number of men reporting high numbers of sexual encounters, participants were categorized into one of four groups for our main outcome, sexual risk with HIV-negative and serostatus unknown partners (serodiscordant partners, conferring HIV transmission risk). Men who reported no anal sex encounters in the past six months were assigned to the no-risk group (0). Men who reported having anal sex in the past six months but never engaging in UAI were categorized in the low-risk group (1). Men who reported engaging in UAI on at least one occasion but less than every occasion they had sex were categorized in the moderate risk group (2). Men who reported never using a condom in any sexual encounters were assigned to the high-risk group (3). This categorization approach was guided by previous research on sexual risk (Ostrow, De Francisco, & Wagstaff, 1998; Preston, D'Augelli, Kassab, & Starks, 2007). Sexual risk outcome was treated as continuous rather than categorical variables in the present analyses, which is an approach that has been supported by previous research on sexual risk that used path analyses (Preston, et al., 2007).

Data Analysis Plan

All data was collected and stored within the LimeSurvey secure database online. Data was downloaded biweekly and securely stored on lab computers. Prior to analysis, data were cleaned and checked for any technical or computational errors. Two independent research assistants reviewed data for suspicious entries (e.g., serial response of one value, inconsistent responses), and no cases were removed as a result of that review. Twenty-eight men did not

complete every item in the survey. For the purpose of this exploratory study, we report on the sample of 142 men who provided complete study data. We compared men who had missing data to men with complete cases before making this decision, and we found no differences between groups on demographic or study variables. Analyses were conducted using SPSS software version 20.0. Correlations and one-way ANOVAs were used to examine relationships of demographic and health variables with outcome measures in order to identify potential covariates for inclusion in the proposed models.

Indirect effects were analyzed using SPSS PROCESS (Hayes, 2013). Bootstrapping was used to test for mediating effects without assuming normality in the sampling distribution (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). A mediation model with two mediators was analyzed (Model 4, Hayes, 2013). Using this approach of mediation analysis, the direct path does not have to be significant in order for mediation to be present (MacKinnon, et al.; Hayes, 2009).

Results

Sample Characteristics

Demographics characteristics are described in Table 1. The mean age of the participants was 45.5 years (range 21-67). The majority of the sample self-identified their race as White (57%), 25% identified as African American, 14% identified as Hispanic or Latino, 2% as Asian or Pacific Islander, and 2% identified as biracial or mixed ethnicity. Most completed their high school education or beyond (98%). The vast majority identified as gay (92%). The mean number of years since HIV diagnosis was about 12 years (range 0 – 32 years). Three quarters of the sample reported having an undetectable HIV viral load, and the remaining 25% reported a detectable viral load or being unaware of their viral load. Age, openness about sexual orientation, relationship status, time since HIV diagnosis, and HIV symptoms were related to outcome variables and were included as covariates in the final mediation model.

Mediation Analyses of Trauma, Internalized HIV Stigma and Social Support on Sexual Risk

The path model of trauma-related symptoms predicting sexual risk with serodiscordant partners is illustrated in Figure 2. Results from regression analyses can be found in Table 2, and are reported in unstandardized form to promote interpretation based on the metrics used in this study. Using mediation analyses, there was no evidence that trauma-related symptoms predicted sexual risk with serodiscordant partners ($b = -.012$, $SE = .007$, $p = .095$, 95% CI $[-.026, .002]$) independent of internalized HIV stigma. Internalized HIV stigma was directly related to sexual risk behavior ($b = .021$, $SE = .008$, $p = .012$, 95% CI $[.005, .037]$). Trauma-related symptoms indirectly influenced sexual risk with serodiscordant partners through its effect on internalized HIV stigma ($b = .011$). A bias-corrected 95% confidence interval for the indirect effect based on 5,000 bootstrap samples was above zero $[.003, .021]$. Thus, participants who differed by one unit of HIV-related trauma symptoms differed by .011 units in their level of sexual risk with serodiscordant partners, with those experiencing greater internalized HIV stigma having greater sexual risk. Conditions for mediation with the social support variable were not met because social support was not significantly related to sexual

risk category. However, social support was correlated with internalized stigma ($r = -.34, p < .001$) and may have played a role in its effect on sexual risk.

Discussion

We examined the association between trauma, stigma, social support and HIV transmission risk behavior in a sample of gay and bisexual MSM who have sought sex partners online. Self-reported trauma-related symptoms indexed on the event of HIV diagnosis did not directly predict sexual risk, contrary our predictions and findings in other studies (e.g. Gore-Felton & Koopman, 2002). Other factors may have impacted how trauma related to sexual risk behavior. Sikkema, et al. (2009) found that trauma-related symptoms were not predictive of HIV transmission risk behavior, but that trauma-related behavioral difficulties (including sexual concerns, dysfunctional sexual behavior, and tension reduction behavior) did predict greater sexual risk. Measuring how trauma manifests behaviorally may have clarified how trauma symptoms impact sexual risk-taking.

We found an indirect association of trauma-related symptoms on HIV transmissions risk mediated through internalized HIV stigma. Though this appears to be a modest effect it should be interpreted in light of the small scale of sexual risk on which a small change could be substantial. We hypothesized that men with greater distress related to their HIV diagnosis may be more sensitive to stigmatization which may then impact their efficacy to negotiate safer sex practices with men who are not HIV-positive. Stigma predicted sexual risk with serodiscordant partners more than the other variables in our model. The effect of stigma on HIV transmission risk behavior has been supported (Hatzenbuehler, et al., 2011) but not in a sample of MSM seeking partners online. It is possible that stigma explains sexual risk beyond the effects of trauma-related symptoms, or that internalized stigma may intensify feelings of distress and limit coping related to one's HIV diagnosis.

Social support did not account for the relationship between trauma-related symptoms and sexual risk, as predicted. There was a strong relationship between trauma-related symptoms and social support, however these did not predict greater sexual risk with serodiscordant or seroconcordant partners. Our sexual risk variable captured number of unprotected anal sex encounters, but did not necessarily account for number of partners. It is possible that some men had a primary sex partner with whom they engaged in more instances of UAI as a means to promote emotional intimacy. Indeed, men who reported living with a partner also reported greater levels of social support. Perhaps the effects of these men accounted for our findings as compared to the effects of men who reported lower social support and may have engaged in more UAI as a means to initiate intimate relationships with other MSM they meet online.

Results of this study should be interpreted in light of some limitations. First, given the cross-sectional design of this study, no causal relationships can be determined. This study was exploratory and future research should examine the relationships between these variables longitudinally. Second, assessments were completed online, which allowed the inclusion of diverse participants across the United States, but there was little control over the level of attention each participant contributed. Third, while our method of assessing sexual behavior

by partner serostatus, sexual positioning, and condom use has been widely used (e.g. Sikkema, Hansen, Meade, Kochman, & Fox, 2009; Kalichman, Gore-Felton, Benotsch, Cage & Rompa, 2004; Benotsch, Kalichman, & Cage, 2002), we did attempt to capture reports of sexual risk over a long recall period of six months. Assessment of sexual risk behavior over long recall periods of 6 to 12 months has been used in previous studies, and research on the assessment of sexual risk behavior has demonstrated that these longer recall periods can be useful for understanding general patterns in sexual behaviors (Shroder, Carey, & Vanable, 2003). We also attempted to correct for reporting issues by creating sexual risk categories on a spectrum, however this approach could have dampened finer differences in sexual risk. It should also be noted that our sample was recruited based on a history of risky sexual behavior (at least on instance of UAI), therefore our results cannot be generalized to all MSM. In addition, we did not differentiate sexual risk behaviors among male partners who were met online versus those met offline. Future studies should assess sexual risk between partners that were met on and offline to understand if there may be some differential in risk assessment between these partner types.

Regardless of these limitations, this is one of the first studies to examine these constructs in a novel sample of gay and bisexual MSM who use the Internet to meet sex partners. Further, previous research has shown relationships between trauma, stigma, social support and sexual risk separately; but no studies to date have examined these psychosocial and behavioral factors together. Most importantly, this study is one of the first to demonstrate an indirect relationship of trauma-related symptoms on HIV transmission risk mediated through the effect of internalized HIV stigma. The modest effect we found indicates the presence of additional moderators in these relationships that should be investigated in future research. Given that sexual networks and sexual risk environments are expanding with the increasing use of the Internet to connect with others for sex, it is important to understand the predictors of sexual risk behavior so that tailored interventions can promote sexual health for men seeking sex online.

Acknowledgments

Funding Information: This work was supported by a National Institute of Mental Health grant (R34-MH087120) awarded to Dean G. Cruess, PhD

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Figure 1.

Proposed path model with multiple mediators to determine the impact of internalized HIV stigma and social support as potential mediators in the relationship between trauma-related symptoms and sexual risk behavior.

Figure 2. Final model demonstrating observed relationships predicting sexual risk with serodiscordant (HIV- and serostatus unknown) sex partners.
Note: $*p < .05$; $**p < .001$

Table 1

Demographic and health characteristics of analyzed sample (N = 142).

Characteristic	M (SD) or n (%)
Age (years)	45.0 (10.7)
Education completed	
11 th grade	2 (1%)
12 th grade	285 (18%)
13 years of school	13 (9%)
14 or more years of school	102 (72%)
Ethnicity	
White	83 (58%)
African American	35 (25%)
Hispanic/Latino	19 (13%)
Asian/Pacific Islander	2 (1%)
Biracial/Mixed Ethnicity	3 (2%)
Employment Status	
Unemployed	28 (20%)
Working	57 (40%)
On disability	45 (32%)
Student	7 (5%)
Retired	5 (4%)
Income	
\$0 - \$10,000	27 (19%)
\$11,000 - \$20,000	33 (23%)
\$21,000 - \$30,000	23 (16%)
\$31,000 - \$40,000	21 (15%)
\$41,000 - \$50,000	10 (7%)
Over \$50,000	26 (18%)
Sexuality	
Gay or homosexual	131 (92%)
Bisexual	11 (8%)
Openness about sexual orientation	
Not open	2 (1%)
Open sometimes	38 (27%)
Open	102 (72%)
Relationship Status	
Not married/not living with partner	113 (80%)
Married/living with partner	29 (20%)
Years since HIV Diagnosis	12.5 (9.6)
Self-reported CD4 Cell Count	650.6 (261.2)
Viral Load	
Detectable	28 (20%)

Characteristic	M (SD) or n (%)
Undetectable	109 (77%)
Do not know	5 (4%)
Taking antiretroviral medication	134 (94%)
#HIV symptoms in past 2 weeks	3.2 (3.7)

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Table 2

Regression analyses among study variables predicting sexual risk with serodiscordant sex partners.

Predictor	Criterion											
	M ₁ (Stigma)			M ₂ (Social Support)			Y (Sexual Risk)					
	B	SE	p	B	SE	p	B	SE	p	B	SE	p
X (Trauma)	a	.522	<.001	d	.117	.039	.003	c'	.012	.007	.095	.095
M ₁							b	.021	.008	.012		
M ₂							e	.008	.012	.544		
Constant	i _{M1}	38.791	5.484	i _{M2}	53.540	3.630	<.001	i _Y	.518	.936	.581	
			R ² =.528			R ² =.205				R ² =.096		
			F(6, 135)=25.114, p<.001			F(6, 135)=5.786, p<.001				F(8, 133)=1.773, p=.088		

Age, Relationship status (married or living with a partner vs. not living with a partner), Openness about sexual orientation, time since HIV diagnosis, and number of HIV-related symptoms in the past 2 weeks were entered as covariates in the above analyses.