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Author manuscript

AIDS Care. Author manuscript; available in PMC 2017 March 24.

Published in final edited form as:

AIDS Care. 2016 ; 28(6): 722–725. doi:10.1080/09540121.2016.1140884.**Disclosure appraisal mediating the association between perceived stigma and HIV disclosure to casual sex partners among HIV+ MSM: A Path model analysis**Haochu Li^{a,b,*}, Xinguang Chen^c, and Bin Yu^c^aSchool of Public Health, Shandong University, Jinan, PRC^bUNC Project-China, University of North Carolina at Chapel Hill Institute for Global Health & Infectious Diseases, NC, USA^cCollege of Public Health and Health Professionals, University of Florida, Gainesville, FL USA**Abstract**

HIV stigma is widely believed to be related to HIV disclosure. However, there is a dearth of studies examining the mechanisms that link stigma to disclosure. This is a specific study to assess the relationship between perceived stigma and HIV disclosure to casual sex partners based on a social cognitive theory. HIV+ men who have sex with men (MSM) from two U. S. cities (N = 297) completed questionnaires administered using audio computer-assisted self-interviewing. Path modeling analysis was used to assess the theory-based structural relationships. Perceived stigma was negatively associated with attitudes, intention and behavior of HIV disclosure to casual sex partners. The association was fully mediated by disclosure appraisal, including disclosure outcome expectations, costs and self-efficacy. Findings of this study add new knowledge regarding HIV stigma and disclosure, and provide timely data supporting more effective behavioral interventions to encourage HIV disclosure among MSM.

Keywords

Perceived stigma; HIV disclosure; HIV+ MSM; Casual sex partner; Disclosure appraisal

Introduction

Stigma is defined as any situation, feature, characteristic, or behavior that decreases “a whole and usual person to a tainted and discounted one” (Goffman, 1963, p. 3). Three types of stigma frequently investigated in HIV/AIDS research are, perceived stigma, enacted stigma and internalized stigma (Steward et al., 2008). Studies showed that the particular type of stigma assessed have different effect on HIV disclosure to sex partners (Przybyla et al., 2013; Simbayi et al., 2007; Overstreet, Earnshaw, Kalichman, & Quinn, 2013). Regarding perceived stigma specifically, its effect on HIV disclosure to sex partners were not found consistently (Wong et al., 2009; Derlega, Winstead, Greene, Serovich, & Elwood, 2002). It’s

*Corresponding author. haochuli@med.unc.edu or hcli@alumni.cuhk.net.

therefore necessary to further investigate mechanisms by which perceived stigma may affect HIV disclosure to sex partners (Anglewicz & Chintsanya, 2011; Patel et al., 2012; Przybyla et al., 2013; Vu et al., 2012).

HIV disclosure is multi-dimensional, including attitudes toward and intention to disclosure and overt disclosing behavior (Dima, Stutterheim, Lyimo, & De Bruin, 2014; Rimal, Bose, Brown, Mkandawire, & Folda, 2009). Guided by the social cognitive theory (Bandura, 1999) and the theory of reasoned action (Fishbein & Ajzen, 1975; Ajzen, 2001), researchers have found that a number of social cognitive factors, particularly disclosure appraisal, may mediate the process from perceived stigma to HIV disclosure. This include reward and cost (Chenard, 2007), self-efficacy for HIV disclosure (Kalichman & Nachimson, 1999), and disclosure outcome expectation (Semple, Patterson, & Grant, 2004; Sullivan, 2005). Serovich (2001) reported a negative relationship between disclosure costs and disclosure attitudes, attention and behavior, and a positive relationship between disclosure rewards and the three disclosure measures. We believe that the disclosure appraisal process may also be affected by perceived stigma, suggesting a mediation model linking stigma to disclosure through disclosure appraisal.

The purpose of this study is to investigate the relationship among perceived stigma, disclosure appraisal, and HIV disclosure. We hypothesized that (1) perceived stigma is negatively associated with HIV disclosure and (2) the association is mediated through the disclosure appraisal, including disclosure outcome expectations, disclosure costs and rewards, and disclosure self-efficacy.

Methods

Participants and sampling

The survey was conducted between December 2009 and April 2014 in two large cities, one in the Midwest and another in the Southeast. Eligible participants were HIV-positive MSM, 18 years, had sex with partners in the past 90 days involving a disclosure decision, had sex with 2 partners in the past year, was interested in or had intention to disclose their serostatus to sexual partners.

The average age of participants ($n = 297$) was 41.8 years ($SD = 11.1$) with an average of 10.3 years of HIV+ ($SD = 8.3$). Among the total sample 145 (48.82%) were self-identified as white/Caucasian, 105 (35.35%) as Black/African American, and 26 (8.75%) as Hispanic; 235 (79.12%) as gay and 224 (75.42%) had sex only with men. Most participants reported being single ($n = 210$, 70.70%), 196 (65.99%) completed at least some college, 201 (67.68%) unemployed with income \$1,000 per month.

Data collection

Participants completed the survey questionnaire using the audio computer-assisted self-interviewing (ACASI) for more reliable data (Des Jarlais et al., 1999; Perlis, Des Jarlais, Friedman, Arasteh, & Turner, 2004). The survey protocols were approved by the appropriate Institutional Review Boards at Ohio State University and University of South Florida. The

survey took approximately 1 to 1.5 hours to complete. Participants were reimbursed \$35 upon completion of the survey.

Measurements

Perceived stigma was measured using the HIV Sigma Scale (Berger, Ferrans, & Lashley, 2001) and used as a predictor variable. The 21 items were rated on a 4-point likert scale with 1(*strongly disagree*) and 4(*strongly agree*). A typical item of the scale reads as “I feel guilty because I have HIV.” The Chronbach’s alpha coefficient = .96 for the scale and mean scores were computed for analysis with higher scores indicating severer stigma.

Four measures of disclosure appraisal were used as mediators and they are *disclosure outcome expectations*, *disclosure costs*, *disclosure rewards* and *disclosure self-efficacy*. Two short 3-item scales (Semple, Patterson, & Grant, 2004) were used to measure the expectations with $\alpha=.47$ (e.g., I believe that disclosing my HIV status to my sexual partner(s) will increase my sexual pleasure”) and self-efficacy with $\alpha=.80$ (e.g., “I can bring up the topic of my HIV+ serostatus with any sex partners”). The disclosure costs (8 items) with $\alpha = .80$ and rewards (10 items) with $\alpha = .76$ were assessed using published scales (Serovich, 2001). A typical cost item is “Relationship would get bad if I disclose my HIV+ status” and a typical reward item is “Disclosure my HIV+ status to my partners will bring us closer.” Items for all the four disclosure appraisal subscales were assessed using a 4-point likert scale with 1(*strongly disagree*) and 4(*strongly agree*). Mean scores were calculated for analysis with higher scores indicating stronger beliefs.

Three HIV disclosure measures were *disclosure attitudes*, *intention*, and *behavior*, each being measured with an author-derived subscale (14 items) and used as outcome variables. The alpha for the attitudes subscale was .94 and a typical item is “People with HIV should disclose their status to causal sexual partners”(1=strongly disagree and 5=strongly agree); the alpha for the intention subscale was .95 and a typical item is “I plan to tell my future sex partners about my HIV status if they specifically ask” (1=strongly disagree and 4=strongly agree); and the alpha for behavior subscale was .97 and a typical item is “I have disclosed my HIV status to my sexual partners with whom I had insertive anal sex”(y/n). Mean scores were computed for analysis.

Statistical Analysis

Cronbach alpha coefficient was used to measure scale reliability. Pearson correlation was used to assess the relationships among the predictor, mediator and outcome variables. Path modeling analysis was used to test the proposed structural relationships among these variables with GFI>0.90, CFI>0.90, RMSEA<0.05 and Chi-square/df (<2) as the indexes of data-model fit. The bootstrapping method (MacKinnon et al, 2002) was used to test the indirect effect. The software AMOS was used for path modeling analysis.

Results

Correlation analysis

Results in Table 1 indicate that perceived stigma was significantly correlated with all three outcome measures (disclosure attitudes, intention and behavior) and three (outcome expectation, cost and self-efficacy) of the four mediator variables assessing social cognitive process of disclosure appraisal. Furthermore, the four mediator variables all were significantly correlated with the three outcome variables, supporting the proposed mediation model.

Structured path modeling analysis

Results in Figure 1 indicate a good data-model (GFI=0.99, CFI=0.99, CHISQ/DF=4.31, RMSEA=0.11). Perceived stigma was significantly associated with three of the four mediators, disclosure outcome expectation ($b=-0.23$, $p<.01$), cost ($b=0.51$, $p<.01$), and self-efficacy ($b=-0.36$, $p<.01$). Among the four mediators, two (disclosure expectation and disclosure self-efficacy) were significantly associated with all three outcomes; disclosure costs were negatively associated with disclosure behavior ($\beta=-0.15$, $p<.01$); and disclosure rewards were positively associated with disclosure attitudes ($b=0.11$, $p<.05$) and intention ($b=0.11$, $p<.05$).

Discussion and conclusions

In this study we tested the mechanism by which perceived stigma may affect HIV disclosure through social cognitive process. The hypothesized structural relationship model was tested with data from a sample of 297 MSM from two large US cities. The mediation mechanism was supported by correlation analysis and confirmed by structural path modeling analysis, supporting further longitudinal studies to determine if the relationships are casual.

The results show a central role of disclosure self-efficacy in mediating the influence of stigma on sexual risk behavior. This finding is in line with the notion that efficacy beliefs are a necessary step bridging causal attributions with achievement strivings (Bandura, 1999; Schunk & Gunn, 1986). In the current study, disclosure self-efficacy has higher coefficients with the three dimensions of HIV disclosure than disclosure outcome expectation. This finding suggests the importance for behavioral interventions in enhancing efficacy beliefs in order to achieve expected behavioral changes against stigma for HIV prevention. With the improvement in disclosure self-efficacy, HIV+ MSM may change their negative outcome expectations to positive, and then they are more likely and better prepared to disclose their HIV status in a sexual setting.

Drawing on the behavioral and social cognitive theories (Ajzen, 2001; Bandura, 1999), it's practical to increase HIV+ MSM's mastery experiences of HIV disclosure to casual sex partner. According to our study findings, training programs can be developed to facilitate HIV+ MSM practicing role-playing of different strategies in how to disclose HIV+ status to casual sex partners in specific scenarios and how to minimize potential negative outcomes thereafter. It is also worth noting in the current study that disclosure rewards was associated

with disclosure attitudes and intention; while disclosure costs was associated with disclosure behavior. Additional studies are needed to verify these study findings.

There are limitations to this study. Data used for this study were cross-sectional in nature, causal relationship cannot be warranted. The low alpha coefficient of the 3-item subscale *disclosure outcome expectation* indicates a potential of underestimate of the associations between the disclosure outcome expectation and other variables. Additional studies are needed to improve the reliability of this variable by adding more items. In addition, this study was conducted in only two cities, caution is needed when generalizing the findings to other populations and settings.

Acknowledgments

This research was supported by the National Institute of Mental Health Grant R01MH0826939. We appreciate the men who participated in this study and would like to thank Dr. Julianne Serovich for comments and advice. The content of the article is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

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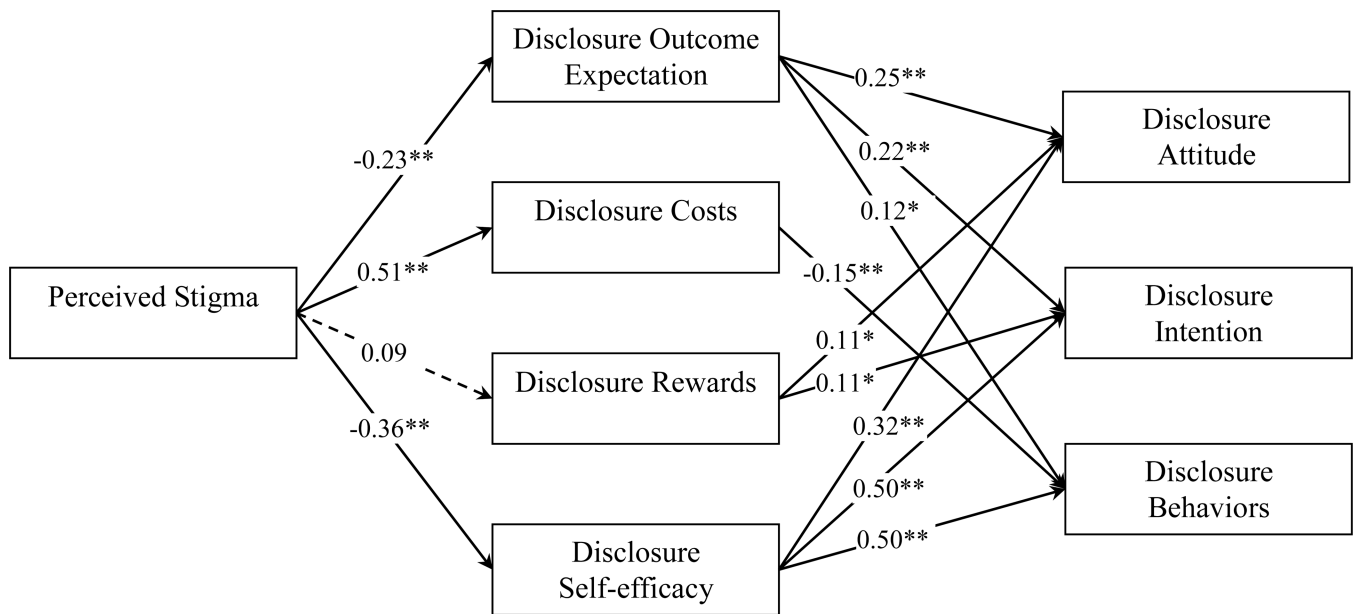


Figure 1. Path Mode of Perceived Stigma, Disclosure Outcome Expectation, Disclosure Costs and Rewards, Disclosure Self-efficacy and Disclosure Attitude, Intention and Behavior **<0.01, *<0.05

Note: Fit index: GFI=0.99, CFI=0.99, CHISQ/DF=4.31, RMSEA=0.11. Only significant routes were included in the figure. Age was controlled as covariate.

Table 1
Correlations of Perceived Stigma, Disclosure Outcome Expectation, Disclosure Costs, Disclosure Rewards, Disclosure Self-efficacy and Disclosure Attitude, Intention and Behavior

Variables	Mean (SD)	2	3	4	5	6	7	8
1. Perceived Stigma	2.51 (0.56)	-0.23**	0.55**	0.07	-0.37**	-0.14*	-0.13*	-0.26**
2. Disclosure Outcome Expectation	2.91 (0.55)		-0.27**	0.35**	0.54**	0.44**	0.49**	0.43**
3. Disclosure Costs	0.33 (0.27)			0.18*	-0.48**	-0.13*	-0.16*	-0.38**
4. Disclosure Rewards	0.72 (0.22)				0.21**	0.25**	0.28**	0.16*
5. Disclosure Self-efficacy	3.06 (0.84)					0.43**	0.55**	0.63**
6. Disclosure Attitude	3.27 (0.61)						0.84**	0.51**
7. Disclosure Intention	3.27 (0.62)							0.57**
8. Disclosure Behavior	3.58 (1.32)							

** <0.01,

* <0.05