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Dyadic dynamics of HIV risk among transgender women and their primary male sexual partners: The role of sexual agreement types and motivations

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Abstract

Transgender women—individuals assigned a male sex at birth who identify as women, female, or on the male-to-female (MTF) trans feminine spectrum—are at high-risk of HIV worldwide. Prior research has suggested that transgender women more frequently engage in condomless sex with primary cisgender (i.e. non-transgender) male partners compared with casual or paying partners, and that condomless sex in this context might be motivated by relationship dynamics such as trust and intimacy. The current study examined sexual agreement types and motivations as factors that shape HIV risk behaviors in a community sample of 191 transgender women and their cisgender primary male partners who completed a cross-sectional survey. Overall, 40% of couples had monogamous, 15% open, and 45% discrepant sexual agreements (i.e., partners disagreed on their type of agreement). Actor-partner interdependence models (APIM) were fit to examine the influence of sexual agreement type and motivations on extra-dyadic HIV risk (i.e., condomless sex with outside partners) and intra-dyadic HIV serodiscordant risk (i.e., condomless sex with serodiscordant primary partners). For male partners, extra-dyadic risk was associated with their own and their partners' sexual agreement motives, and male partners who engaged in extra-dyadic HIV risk had an increased odds of engaging in HIV serodiscordant intra-dyadic risk. Study findings support inclusion of the male partners of transgender women into HIV prevention efforts. Future research is warranted to explore the interpersonal and social contexts of sexual agreement types and motivations in relationships between transgender women and their male partners to develop interventions that meet their unique HIV prevention needs.

Keywords

transgender women; HIV; sexual agreements; relationships; couples

Introduction

Transgender women—individuals assigned a male sex at birth who identify as women, female, or on the male-to-female (MTF) trans feminine spectrum—are at high-risk of HIV worldwide (Baral et al., 2013). Meta-analysis of studies with transgender women in the United States found that approximately one in four are HIV seropositive (Herbst et al., 2008). Multiple contextual factors contribute to HIV risk in transgender women, including systematic social and economic marginalization (Brennan et al., 2012; Gamarel, Reisner, Laurenceau, Nemoto, & Operario, 2014) and gender affirmation and validation processes (Melendez & Pinto, 2007; Sevelius, 2013). The importance of contextualizing HIV prevention and intervention efforts to meet the unique needs of transgender women has been previously articulated (Operario & Nemoto, 2010; Sevelius, Reznick, Hart, & Schwarcz, 2009).

Risk for HIV infection in transgender women has been attributed to relationship contexts – transgender women more frequently engage in condomless sex with primary cisgender (i.e., non-transgender) male partners compared with casual or paying/transactional sex partners (Nemoto, Operario, Keatley, Han, & Soma, 2004; Operario, Nemoto, Iwamoto, & Moore., 2008), and condomless sex in this context might be motivated by relationship dynamics such as trust and intimacy (Nemoto, Operario, Keatley, Oggins, & Villegas, 2004).

Within the broader HIV prevention literature, agreements about sex with outside partners continue to garner increasing attention (Gass, Hoff, Stephenson, & Sullivan, 2012; Grov, Starks, Rendina, & Parsons, 2014; Hoff et al., 2009; Mitchell, 2014). Sexual agreements refer to couples' decisions about whether to engage in or refrain from certain sexual behaviors (Hoff & Beougher, 2010). Sexual agreements may be closed (i.e., monogamous) or open, permitting a wide range of mutually acceptable situations for sex with outside partners, including sex with a third person when both partners are present, separation of physical and emotional intimacy with outside partners, allowing “safe” sex with outside partners (using a condom), not engaging in HIV transmission risk behaviors with outside partners (e.g., mutual masturbation or oral sex rather than anal sex), or non-disclosure of outside sexual activity (Hoff & Beougher, 2010). Recent studies suggest that transgender women report sexual agreements with their primary partners (Greene, Fisher, Kuper, Andrews, & Mustanski, 2014; Wilson, Iverson, Garofalo, & Belzer, 2012).

Sexual agreements have been hypothesized to be motivated by HIV/STI prevention, relationship intimacy, and sexual fulfillment (Hoff, Beougher, Chakravarty, Darbes, & Neilands, 2010). Relationship motivations, as opposed to HIV/STI prevention motivations, have been cited as a top motivator for gay male couples' sexual agreement (Hoff et al., 2010). In gay male couples, relationship motivations have been associated with reduced reports of condomless sex with casual partners; whereas, sexual motivations were associated with greater reports of condomless sex with outside partners, regardless of the sexual

agreement type (Hoff, Chakravarty, Beougher, Neilands, & Darbes, 2014). Taken together, these findings suggest that HIV prevention research must account for the motivations behind a couples' sexual agreement rather than just the agreement type itself.

Given the high prevalence of HIV infection among transgender women in relationships with cisgender male partners (Clements-Nolle, Marx, Guzman, & Katz, 2001; Nemoto, Operario, Keatley, Han, et al., 2004), focusing on couples' sexual agreements may be a useful HIV prevention strategy for transgender women and their male partners. Using dyadic data from a community sample of transgender women and their primary male sexual partners, this study sought to examine: (1) the prevalence and type of sexual agreements among these couples, (2) whether sexual agreement motives were associated with extra-dyadic HIV risk (i.e., condomless sex with outside partners) for both partners, and (3) whether sexual agreement motives were associated with HIV serodiscordant intra-dyadic risk (i.e., condomless sex with main partners) for both partners.

Methods

Participants

Participants were 191 couples comprised of transgender women and their primary cisgender male partner. All cisgender male partners were assigned the male sex at birth and identified themselves as male; for parsimony, we refer to these participants as male. Transgender women and their male partners individually completed cross-sectional questionnaires between November 2008 and November 2010 (Operario, Nemoto, Iwamoto, & Moore, 2011). Couples were recruited in the San Francisco Bay area in California using purposive sampling methods by posting flyers in a range of community spaces and venues where transgender women and male partners of transgender women congregate (e.g., community-based organizations, bars, and nightclubs). Couples who called the study were screened separately for eligibility, and eligible participants were scheduled for a computer-assisted survey at the research center or a conveniently located confidential space at a community-based organization. Both partners were required to attend the appointment together, but were consented and completed survey assessments separately.

To be eligible, both partners must have reported each other as their primary intimate partner ("partner to whom you feel committed above anyone else and with whom you have had a sexual relationship"). In addition, all participants were: (1) at least 18 years-old; (2) living or working in the San Francisco Bay area; (3) English or Spanish speaking; and (4) able to provide informed consent.

Procedures

Surveys were administered to participants using audio computer-assisted self-interview (ACASI) technology. Surveys took approximately 1 hour to complete and participants received \$50 reimbursement and a brochure with a list of local community organizations addressing transgender issues. Procedures were approved by the Institutional Review Boards (IRB) at the Public Health Institute, Oakland, University of California San Francisco, and University of Oxford, Oxford, United Kingdom.

Measures

Sociodemographics—Participants self-reported their age (in years), assigned sex at birth and current gender identity, race and ethnicity, relationship length (in months), educational attainment, and income level.

Couple-HIV Serostatus—Transgender women and their male partners each self-reported their HIV serostatus. A couple-level HIV serostatus variable was operationalized such that couples were classified as concordant negative (both HIV-negative), concordant positive (both HIV-positive), and serodiscordant (one partner HIV-negative, the other HIV-positive).

Sexual Agreement Type—Participants were asked to describe their current sexual agreement as follows: “Which one of the following scenarios best describes the current agreement that you and your primary partner have?” Participants chose one of the following response options: “(1) Both of us cannot have any sex with an outside partner, (2) We can have sex with outside partners but with some restrictions, (3) We can have sex with outside partners without any restrictions, (4) We do not have an agreement.” Consistent with prior research on sexual agreements (Hoff et al., 2009), each participant's response was compared to their partner's to create three couple-level sexual agreement categories: *monogamous agreements* where both partners chose option (1), *open agreements* where both partners chose either option (2) or (3), and *discrepant agreements* where one partner chose option (1) and the other partner chose either option (2) or (3) or (4).

Condomless Sex—Participants were asked if they had engaged in any condomless vaginal or anal intercourse during the past 3 months with their primary partner and casual partners. Participants who engaged in any HIV serodiscordant condomless sex with their primary partner were coded as ‘1’ and those who did not were coded as ‘0’. Similarly, participants who engaged in any condomless sex with an outside casual partner were coded as ‘1’ and those who did not were coded as ‘0’.

Agreement Motives—Based on a measure from previous work with same-sex male couples (Hoff et al., 2010), participants were asked 10 questions about their motivations for having a sexual agreement with their partner; Likert-scale responses ranged from 1 (Strongly disagree) to 4 (Strongly agree). A principal components factor analysis (PCA) (DeVellis, 2011) was used to examine the underlying factor structure of these ten items. In prior research, two distinct factors emerged with male couples (Hoff et al., 2014). The PCA revealed two distinct subscales, and we conducted a second analysis that included rotation for an enhanced factor solution. Both orthogonal (Equamax) and oblique (Promax) rotations were used (Kaiser-Meyer-Olkin measure of sampling = 0.82). Because the two factors had a statistically significant correlation with each other, results of the oblique rotation are reported. Both factors had eigen values greater than 1.0, and were the only plausible factors based on Cattel's scree test. Results of the PCA and the percentage of participants endorsing each item are presented in Table 1. Consistent with prior research (Hoff et al., 2014), seven items (i.e., to strengthen my relationship with my partner, to protect my partner and myself from HIV), loaded onto the first factor, termed “Relationship Quality Enhancement Motivation (RQEM),” which accounted for 46.2% of the total variance. Three items (i.e., to

have satisfying sex, to keep me from getting bored sexually in my relationship with my partner) loaded onto the second factor, which we termed “Sexual Life Enhancement Motivation (SLEM).” The SLEM factor accounted for an additional 16.3% of the total variance. Subscale scores were then created by summing the responses on the relevant items.

Data Analysis

Actor-partner interdependence models (APIM) using a structural equation modeling approach (see Figure 1) were fit to examine the associations between couples' sexual agreement types and motivations with each partner's self-reports of engaging in extra-dyadic condomless sex (Kenny, Kashy, & Cook, 2006). A logistic regression model was employed to examine the associations between couples' sexual agreement types and motivations with intra-dyadic HIV serodiscordant condomless sex because the outcome variable is at the couple-level. All models were adjusted for relationship length. Models containing age, race/ethnicity, income, and education as additional covariates were also tested but did not reach statistical significance at the alpha 0.05 level, and results did not differ substantively; therefore, the models presented are not controlled for these covariates (models available from corresponding author upon request). All analyses were conducted in Mplus 6.1.

Results

The majority of the sample (79.1%) self-identified as a member of a racial/ethnic minority group (27.4% Black; 18.7% Latino; 12.6% Asian; & 19.4% Mixed/Other). More than half of the sample (61.3%) reported financial hardship, earning less than \$500 a month.

Relationship length ranged from one to 419.5 months (*Mean*=37.9 months, *SD*=51.6) and the average age of all participants was 37.1 years (*SD*=11.3). Approximately, 18% (*n*=35) of the transgender women and 40% (*n*=75) of the cisgender male partners self-reported an HIV-positive serostatus. In regards to couples HIV serostatus, 55.7% (*n*=103) of the couples were in an HIV seroconcordant negative relationships, 31% (*n*=57) were in an HIV serodiscordant relationships, and 14% (*n*=26) were in an HIV seroconcordant positive relationship. Overall, 55.1% (*n*=102) of couples reported concordance in their sexual agreement – 40.0% (*n*=74) had monogamous agreements and 15.1% (*n*=28) had open agreements. In total, 44.9% of couples reported discrepant agreements (i.e., one partner indicated having an open agreement and the other reported a monogamous agreement).

In total, 10% (*n*=19) of the transgender women and 11% (*n*=22) of their male partners reported engaging in vaginal or anal sex with an outside partner. Further, 4% (*n*=7) of the transgender women and 7% (*n*=12) of their male partners reported engaging in condomless sex with outside partners. Approximately 36% (*n*=66) of the couples reported engaging in intra-dyadic condomless vaginal or anal sex, and approximately 16% (*n*=30) reported engaging in HIV serodiscordant intra-dyadic condomless sex.

Table 2 presents results of multivariable actor-partner interdependence models. Male partners' sexual life enhancement motivation scores were associated with a higher odds of engaging in extra-dyadic condomless sex (AOR=1.77, 95% CI: 1.13, 2.77); whereas, higher scores on the relationship quality enhancement motivation subscale were associated with a lower odds of engaging in extra-dyadic condomless sex among the male partners (AOR =

0.57, 95% CI: 0.36, 0.88). Similarly, their transgender women partners' relationship quality enhancement motivation scores were associated with a lower odds of reporting extra-dyadic condomless sex (AOR=0.67, 95% CI: 0.43, 0.99). For transgender women, being in a HIV negative concordant relationship was associated with a reduced odds of engaging in extra-dyadic condomless sex (AOR=0.34, 95%CI: 0.06, 0.99), compared to being in an HIV positive concordant relationship.

Male partners who engaged in condomless sex with outside partners had significantly greater odds of reporting HIV serodiscordant intra-dyadic condomless sex (AOR=3.55, 95% CI: 1.10, 9.55) (Table 3). No other variables were associated with intra-dyadic HIV serodiscordant condomless sex.

Discussion

To our knowledge, this is the first study examining the prevalence of sexual agreements and associations between sexual agreement types and motivations with intra- and extra-dyadic risk among transgender women and their male partners. We found that a substantial number of couples had discrepant reports of whether or not they were in a monogamous or open agreement. This finding is particularly noteworthy as Hoff and colleagues (2009) found that gay males who held discrepant views of their sexual agreement had the poorest relationship quality and endorsed greater negative communication (i.e., mutual avoidance and withholding) compared to males in mutually open and monogamous sexual agreements. Future research is warranted to better understand associations between communication, relationship quality, and sexual agreement types among transgender women and their male partners.

In dyadic analyses that simultaneously modeled the probability of extra-dyadic condomless sex with outside partners for transgender women and their male sexual partners, both actor and partner effects in extra-dyadic condomless sex were found for male partners. Male partners' and their transgender women partners' relationship motivations, such as wanting to protect and strengthen the relationship, were associated with a reduced odds of the male partners' engagement in condomless sex with outside partners. Interdependence theory provides a useful framework for understanding how sexual agreement motivations may be linked to condomless sex with outside partners. Interdependence theory posits that health-enhancing behaviors (i.e., reduced HIV risk) are more likely to occur in members of a couple when each member believes that a health threat (e.g., HIV/STI infection) is important not only to themselves, but also to their partner and their relationship (Lewis et al., 2006). Thus, from a motivational point of view, relationship-focused motives for sexual agreements (e.g., to protect and strengthen the relationship) may result in beneficial health outcomes, including sex with condoms. Future research is warranted to better understand whether and how couples comprised of transgender women and their male partners appraise HIV risk, define sexual health goals, and utilize communal coping strategies to reduce the potential threat of HIV acquisition or transmission in their relationship and to mutually achieve their relationship goals.

Sexual motivations behind agreements were found to represent an important determinant of extra-dyadic risk for male partners—such that their own and their partners' sexual agreement motivations for a satisfying and adventurous sex life statistically predicted extra-dyadic condomless sex. In addition, the only significant predictor of intra-dyadic HIV serodiscordant condomless sex was the male partners' reports of extra-dyadic condomless sex. These findings can be considered in light of Connell's theory of gender and power (Connell, 1987), previously applied to understand HIV risk in heterosexual couples (Wingood & DiClemente, 2000) and are consistent with a relational theory of gender and health that foregrounds power and social inequality in understanding health behaviors—particularly for men (Courtenay, 2000). Having such sexual motivations could be interpreted an expression of traditional masculine gender role norms—i.e., men having strong sexual desires and appetites; whereas, transgender women may be expressing feminine gender role norms—i.e., fear of being unattractive (Gillespie & Eisler, 1992). Understanding whether and how gender and power operates within transgender women and their male partners' sexual decision-making has the potential to yield strengths-based HIV prevention interventions to empower transgender women in their partnerships.

Notably, there were no significant actor effects in extra-dyadic risk behaviors for transgender women. Relationship quality or sexual life enhancement motivations behind agreements do not appear to be driving extra-dyadic risk behaviors in this sample of transgender women. Other factors may be more salient in determining transgender women's sexual risk behaviors. For example, gender affirmation has been shown to be an important determinant of HIV risk in transgender women of color, but was not measured in this study (Sevelius, 2013). Gender affirmation and validation of their felt and expressed sense of self as a woman (i.e., being seen as female, as a “real” woman) may override transgender women's own relationship quality or sexual life enhancement motivations. Indeed, the only factor that statistically predicted transgender women's lower risk with an outside partner was being in a HIV-negative concordant relationship compared to a HIV-positive concordant relationship.

Several limitations are important to consider in interpreting this study's findings. First, HIV status was self-reported, and viral suppression among HIV-positive participants was not assessed, which may underestimate HIV prevalence and risk estimates. Further, only 4% of transgender women and 6% of their male partners reported any condomless sex with outside partners. The current sample was sufficient to support the analyses conducted; however, the sample size was not sufficient to examine differences in extra-dyadic HIV serodiscordant condomless sex. As such, future research is needed to more fully capture the ways in which sexual agreement types and motives are associated with different types of biobehavioral risk profiles. Further, this study is a convenience sample recruited from high-risk venues in an urban city where the majority of participants were living below the poverty line and nearly 30% of the total sample self-reported living with HIV. Therefore, findings may not be generalizable to transgender women-cisgender male couples in other settings.

Despite these limitations, study findings have several noteworthy implications for HIV prevention efforts with transgender women and their male partners. Prior research illustrates that the dyads with primary male partners are an important context for HIV prevention

efforts with transgender women, and particularly for their male partners who appear to be high-risk, difficult-to-reach, and in need of enhanced access to the HIV continuum of care (Operario et al., 2011). Our findings suggest that the motivations behind sexual agreements appear to be of critical importance for male partners in reducing HIV risk, independent of the sexual agreement itself. Specifically, HIV risk may be reduced when male partners are motivated by relationship-based factors, such as building, protecting, and strengthening their relationship, as well as by HIV/STI prevention. By involving both transgender women and their male partners, researchers and prevention providers can understand the couples' agreements and equip them with skills to discuss their agreements openly so that both partners can make informed choices about their acceptable levels of risk. Capitalizing on relationship enhancing motivations, while allowing partners to discuss their sexual desires, may be an especially promising approach for interventions with male partners of transgender women and can be incorporated into biomedical strategies, including PrEP dissemination and couples HIV testing and counseling protocols.

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Figure 1. Visual Schematic of Actor-Partner Interdependence Models (APIM):ExaminingTransgender Women and Their Non-Transgender Male Partners' Reports of Sexual Agreement Type, Motivation for Sexual Agreements, and Extra-Dyadic Sexual Risk Behaviors.

Table 1
Results of a Principal-Components Factor Analysis of the 10-item Sexual Agreement Motivations Scale

Item no.	Item	2-Factor Solution			% Transgender Women Who Endorse ^a	% Male Partners Who Endorse ^a
		Factor 1 "RQEM"	Factor 2 "SLEM"			
1	To strengthen my relationship with my partner	0.67	<i>b</i>		63.8	63.8
3	To protect my partner and myself from HIV	0.73	<i>b</i>		61.1	36.8
4	To protect partner/self from HIV	0.78	<i>b</i>		64.3	64.3
5	To build trust with my partner	0.79	<i>b</i>		67.6	68.1
6	To please my primary partner	0.73	<i>b</i>		60.5	63.2
7	To be honest with my primary partner	0.75	<i>b</i>		70.8	69.2
10	To protect my relationship	0.68	<i>b</i>		67.0	68.6
2	To have satisfying sex	<i>b</i>	0.65		49.7	51.4
8	To keep me from getting bored sexually in my relationship with my primary partner	<i>b</i>	0.72		55.7	47.6
9	To be more sexually adventurous	<i>b</i>	0.72		48.6	40.0
	Eigenvalue	4.62	1.64			
	% of variance	46.21	16.34			
	Range	7 – 28	3 – 12			
	Cronbach's α	0.88	0.77			

Note.

^aIndicates the percentage of transgender women and male partners who responded 3 (*Agree*), 4 (*Strongly Agree*).

^bBlank cells indicate factor loadings less than the absolute value of .20.

RQEM=Relationship Quality Enhancement Motivation. SLEM = Sexual Life Enhancement Motivation. Kaiser-Meyer-Olkin measure of sampling = 0.82

Table 2

Correlates of Extra-dyadic Condomless Sex (N = 191 Couples)

	Transgender Women		Male Partner	
	AOR	95% CI	AOR	95% CI
Actor Effects				
SLEM	1.17	0.95, 1.45	1.77	1.13, 2.77
RQEM	0.85	0.70, 1.04	0.57	0.36, 0.88
Partner Effects				
SLEM	0.98	0.72, 1.34	1.53	0.98, 2.33
RQEM	0.85	0.70, 1.05	0.67	0.43, 0.99
Couple HIV Status^a				
Discordant	0.43	0.05, 3.51	0.62	0.09, 4.36
HIV Negative Concordant	0.35	0.06, 0.99	0.90	0.15, 5.31
Sexual Agreement^b				
Discrepant	0.76	0.13, 4.46	0.93	0.21, 4.00
Relationship Length^c	1.01	0.99, 1.02	1.00	0.99, 1.02

Notes:

^aCouple HIV Serostatus is a couple-level variable, concordant positive is the referent.^bDiscrepant sexual agreement is a couple-level variable, none of the couples in a monogamous agreement engaged in condomless sex with outside partners, the referent is open sexual agreement.^cRelationship length is a couple-level variable, the mean of self-reported relationship length of both partners.

AOR = Adjusted Odds Ratio. 95% CI = 95% Confidence Interval. RQEM = Relationship Quality Enhancement Motivation. SLEM = Sexual Life Enhancement Motivation.

Table 3
Correlates of Intra-dyadic HIV Serodiscordant Condomless Sex (N = 191)

	AOR	95% CI
SLEM		
Transgender Women	1.00	0.90, 1.11
Male Partners	1.08	0.96, 1.22
RQEM		
Transgender Women	1.00	0.90, 1.04
Male Partners	0.93	0.82, 1.04
Condomless sex with OP^a		
Transgender Women	1.30	0.22, 7.58
Male Partners	3.89	1.93, 12.04
Relationship Length^b	1.00	0.99, 1.01

Notes:

^a OP = outside partner.

^b Relationship length is a couple-level variable, the mean of self-reported relationship length of both partners.

AOR = Adjusted Odds Ratio. 95% CI = 95% Confidence Interval. RQEM=Relationship Quality Enhancement Motivation. SLEM = Sexual Life Enhancement Motivation