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LIFETIME RISK FACTORS FOR HIV/STI INFECTIONS AMONG MALE-TO-FEMALE TRANSGENDER PERSONS

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Abstract

Objective—Describe and evaluate risk factors for HIV/STIs among male-to-female (MTF) transgender persons.

Method—Using the Life Chart Interview, potential lifetime risk factors for HIV/STIs among MTFs were measured and evaluated in conjunction with lifetime exposures for HIV, syphilis, hepatitis B and hepatitis C. The participants were 517 MTFs between the ages of 19 and 59 from the New York Metropolitan Area.

Results—HIV/STIs were low among Caucasian Americans and very high among Hispanics and African Americans. In the latter groups, HIV and hepatitis B were associated with an androphilic sexual orientation, lifetime number of commercial sex partners (sex work), and the social expression of transgender identity; syphilis was associated with lifetime number of casual sex partners; hepatitis C was associated with injection drug use, unemployment, and social expression of transgender identity. In multivariate models, the social expression of transgender identity was the strongest and most consistent predictor of HIV/STIs. Consistent with their lower levels of infections, Caucasian Americans reported significantly lower levels of the risk factors found to be predictive of HIV/STI among Hispanics and African Americans.

Conclusion—HIV/STI prevention in this population should be targeted at Hispanic and African Americans. Prevention programs should incorporate multiple components designed to address the diverse issues confronting ethnic minority transgender persons, with an emphasis on the social expression of transgender identity.

Keywords

Transgender; HIV; STIs; Ethnicity; Life Chart Interview

Previous studies have reported very high levels of HIV and other STIs among male-to-female (MTF) transgender persons. Surveys of MTF sex workers detected levels of HIV antibodies ranging from 62% to 74% with syphilis and hepatitis B exceeding 75%.^{1–3} HIV among MTFs recruited from the streets ranged from 22% to 35%.^{4–6} Follow-up studies of MTFs receiving social services observed yearly incidence rates of HIV ranging from 3.5% to 7.8%.^{7–8}

Several risk factors have been suggested for HIV/STIs in this population. More than one-half of MTFs report a history of commercial sex partners (sex work) which is widely thought to put them at risk for HIV/STIs.⁹ Because of difficulties in maintaining employment in the legitimate economy, MTFs may be financially compelled to pursue sex work, which then puts them at risk for HIV/STIs.⁹ Lifetime numbers of non-commercial sex partners are much higher among MTFs compared to general population, and these partnerships may likewise contribute to HIV/STIs.^{10–11} Non-injection substance use may broadly increase HIV/STI vulnerability, and lead to illicit psychoactive drug injection which is a well-established risk factor for HIV, hepatitis B, and especially hepatitis C.¹²

Significant numbers of MTFs have used feminizing hormones to enhance their presentation of gender.¹³ The accepted medical practice is to prescribe hormone pills to be taken orally, but many doctors prescribe, and many patients prefer, intramuscular shots (injections are thought by patients to produce quicker results). The reuse of unsterilized needles for intramuscular injections, as with intravenous injections, poses a potential risk for HIV/STIs.¹³

Because of their failure to conform to conventional gender roles, MTFs may experience psychological and physical abuse, which is proclaimed to be a fundamental cause underlying many of the issues confronting gender variant individuals, including HIV infection.¹⁴ Social expressions of transgender identity may be psychologically beneficial in important respects, but “coming out” to others may also expose gender-variant individuals to increased abuse and discrimination and ultimately increase their odds of HIV/STI infections.¹⁵

The subset of MTFs sexually attracted only to men (androphilic) may have an elevated risk for HIV/STI because of their comparatively frequent sexual contacts with high risk partners (MSMs).¹⁶ The prevalence of HIV among Hispanics and African American MTFs has been shown to be much higher than the prevalence of HIV among Caucasian American MTFs.⁴

Empirical research bearing on these potential HIV/STI risk factors among MTFs is, in fact, limited and methodologically weak. Previous studies typically relied on recollections of risk factors in the recent and distant past in conjunction with narrowly defined samples of MTFs. This study examines potential HIV/STI risk factors using an innovative methodology for the collection of retrospective data (described below) and a diverse and broadly-recruited sample of MTFs from the New York Metropolitan Area.

METHODS

Sampling and Data Collection

A total of 517 MTFs were recruited for the baseline component of a large cross-sectional/longitudinal study of MTFs in the New York Metropolitan Areas. All study participants were assigned as male at birth but subsequently did not regard themselves as ‘completely male’ in all situations or roles (transgender identity). Eligibility criteria included transgender identity (as defined above), age of 19 or older, and the absence of psychotic ideation (two were screened out). Because of the small numbers, respondent's over the age of 59 and those indicating an ethnicity other than Caucasian American, African American or Hispanic were not included in this report. Study participants were broadly recruited from the streets, clubs, newspaper advertisements, transgender organization in the New York Metropolitan Area, the Internet, and referrals of other transgender persons by study participants. They were paid \$30 for the baseline interview. Transgender or gender variant individuals were actively involved in all aspects and phases of the research design (instrument construction, interviewing, data analysis, and dissemination of the findings). The interviewers, all but one of whom was transgender or gender variant, were fully trained (including mock and observed interviews) with an on-going monitoring of their performance (including interviewer drift).

Instrumentation

Face-to-face interviews were conducted with the *Life Review of Transgender Experiences (LRTE)*, which adopts and extends the protocols and format of the Life Chart Interview (LCI)¹⁷ which was developed in conjunction with the National Co-morbidity Survey (NCS).¹⁸ The LCI (and the LRTE) uses time-focused interviewing (all questions are referenced with regard to a particular time frame) and multiple sets of personal and social memory cues or anchors to improve the accuracy of symptom recall. The LCI has now been implemented and validated in mental health surveys around the world.¹⁹ Versions of this methodology have been used to study changes in relationships over the life course.²⁰ The LRTE is designed specifically for an MTF population and includes a broad range of social, behavioral, economic, and psychiatric assessments. The Institutional Review Board (IRB) of the National Development and Research Institutes, Inc. (NDRI) approved all of the research protocols.

Measurements

Biological Assays (Bendiner & Schlesinger Laboratories)—The presence of HIV antibodies was determined by an enzyme immunoassay (EIA) screen with a Western blot confirmation. Syphilis was assayed with a rapid plasma reagin screen (RPR) and a fluorescent Treponema antibody (FTA-TP) confirmation. Hepatitis B was determined by the presence of core antibodies. Hepatitis C was assessed with a third-generation enzyme immunoassay (EAI) with a PCR confirmation. By design, all of these viral assessments reflect lifetime exposures.

Lifetime HIV/STI Risk Factors—The LRTE incorporates reporting intervals corresponding to stages of the life course. Adolescence was divided into early adolescence (ages 10 to 14) and late adolescence (ages 15–19) for all of the respondents. For the younger respondents with a current age of 19 to 39, adulthood was indicated as early adulthood (ages 20–24), young adulthood (ages 25–29) and early middle age (ages 30–39). For the older respondents with a current age of 40 to 59, adulthood was indicated more broadly as early/young adulthood (ages 20–29), early middle age (ages 30–39), and later middle age (ages 40–59). These differences in the duration of the post-adolescent life stages for the younger and older respondents necessitated a statistical control for current age in much of the analysis below.

Lifetime Numbers of Sex Partners—Respondents were asked about the total numbers of different commercial (paying), casual (short term or “one night stands”), and committed (long term relationships including marriage) sex partners. Item responses were added across the stages of life to form a lifetime count of these three types of sexual partners. The raw counts of commercial, casual and committed sexual partners will be divided by 10 in the logistic regression modeling below (i.e. each unit of measurement equals 10 partners).

Drug Injections—Months of injecting psychoactive drugs were assessed across stages of life to form a lifetime measure of non-hormonal drug injection. Due to the low numbers, this distribution was trichotomized (0 = never; 1 = less than five years; 2 = five years or more). Injection of feminizing hormones was measured on a continuous scale as the years of injection.

Substance Use—Months of using alcohol heavily (5+ drinks/day) or using ten illicit drugs were added across the stages of life and divided by 12 to form a composite lifetime assessment of substance use years.

Gender Abuse—Durations of time the respondents were “verbally abused or harassed and thought it was because of their gender identity or gender presentations” (psychological abuse) were assessed. A parallel item referred to durations of time respondents were “physically abused or beaten” (physical abuse). Durations of the two types of abuse, at given stages of life, were trichotomized (0=never abused; 1= abused less than once a month; 2= abused at least

once a month). Categorized responses for the two types of abuse during each of the five stages of life were added to form a composite measure of lifetime gender abuse, which theoretically ranged from 0 to 10.

Unemployment—Employment was gauged by whether or not (0 or 1) respondents were typically employed full or part time (sex work not included). These responses were reverse coded and added across three adult stages of life to form a measurement of unemployment with a theoretical range from 0 to 3.

Disclosure of transgender identity—Whether or not the respondent's transgender identity was known to parents, siblings, friends, co-workers, and fellow students was determined. For each of these five interpersonal contexts, transgender identity disclosure was coded as 0 (known to no others); 1 (known to some but not all others) or 2 (known to all others). A lifetime summary of transgender identity disclosure was computed by adding these scores across the five interpersonal contexts and the five stages of life with a theoretical range of 0 to 50. Because of differences in the extent to which these interpersonal contexts, such as school or work, were applicable or available during given stages of life, an additional measurement of the availability of these interpersonal contexts was obtained, and will be used as a covariate in some of the analysis below. This covariate reflects the availability of the above five interpersonal contexts across five stages of the life course with a theoretical range from 0 to 25.

Dressing in the Female Role in Public—This was scored as 0 (never); 1 (part time) or 2 (full time) and summed across the five life stages to provide a lifetime summary of dressing in female attire in public, with a theoretical range of 0 to 10.

RESULTS

Description of the Study Participants

The 517 respondents included in this report ranged in age from 19 to 59 with a mean age of 37. Hispanic identification was 47.6%, with 23.4% and 29.4% classified as non-Hispanic African American, and non-Hispanic Caucasian American, respectively. More than half (58.1%) of the included respondents were high school graduates (12 years of education); about one fifth (18.2%) were college graduates (at least 16 years of education). About two thirds of the respondents (64.2%) were sexually attracted to males only (androphillic); 17.8% were only attracted to females (gynephillic); 14.8% were attracted to both males and females (bisexual or androphillic/gynephillic); and 3.2% were not attracted to either males or females (asexual). For the analysis below, sexual orientation will be dichotomized as androphillic (64.2%) or non-androphillic (35.8%).

Lifetime HIV/STI Infections across Ethnic Groups

HIV was 3.5% among Caucasian Americans compared to 49.6% and 48.1% among the Hispanics and African Americans. Syphilis was 1.4% among the Caucasian Americans compared to 21.6% and 14.7% among the Hispanics and African Americans. Hepatitis B was 6.5% among the Caucasian Americans compared to 36.0% and 35.5% among the Hispanics and African Americans. Hepatitis C was 3.6% among the Caucasian Americans compared to 15.7% and 7.4% among the Hispanics and African Americans.

Potential Lifetime HIV/STI Risk Factors across Ethnic Groups

Because of the extremely low numbers of HIV/STIs among the Caucasian American, the effects of risk factors on these infections within this ethnic group, or across ethnic groups, can

not be estimated. A *description* of HIV/STI risk factors within and across ethnic groups is possible however and will be broadly informative about HIV/STI etiology in this population.

Adjusted for age, no differences across the three ethnic groups were observed with regard to lifetime psychoactive drug injections. No age-adjusted differences between the Hispanics and the African Americans were observed for the remaining risk factors described above. Compared to the Hispanics and African Americans (considered as a group), the Caucasian Americans reported fewer commercial and causal lifetime sex partners, fewer years of injecting female hormones, less gender-related abuse (physical or psychological), less lifetime unemployment, less gender identity disclosure, and less dressing in the female role in public.

Modeling of HIV/STIs among MTFs of Color

Bivariate Modeling—The associations of the above lifetime HIV/STI risk factors with lifetime HIV/STI infections were estimated using logistic regression (Table 1). These associations include current age as a covariate (coefficients not displayed). Statistical significance was determined by the Wald test with 2-sided p-values indicated for significance at the .05 and .01 levels.

Number of lifetime commercial sex partners was associated with HIV. The odds ratio of 1.02 indicates that an increase in ten lifetime commercial sex partners, controlling for age, is roughly associated with a 2% increase in the likelihood of HIV (odds ratio of 1.02). Number of lifetime commercial sex partners was also associated with hepatitis B and hepatitis C. Number of lifetime casual sex partners was associated with syphilis but not HIV, hepatitis B or hepatitis C. Number of committed sex partners was not associated with any of the HIV/STIs.

Years of psychoactive drug injection were strongly associated with hepatitis C but not the other HIV/STIs. Years of hormone injection were not associated with any of the HIV/STIs. Hispanic identification (compared to African American) was associated with hepatitis C. Sexual orientation (androphilic compared to non-androphilic) was associated with HIV and hepatitis B. Substance use was associated with hepatitis B and hepatitis C.

Gender abuse was not associated with the HIV/STIs. Unemployment was associated with HIV, hepatitis B, and hepatitis C. Gender identity disclosure was associated with HIV, hepatitis B, and hepatitis C. The above analysis included number of available interpersonal contexts as a covariate (coefficients not displayed). Female dressing in public was associated with HIV, hepatitis B and hepatitis C.

Multivariate Analysis—To clarify the effects of the above statistically significant HIV/STI risk factors, multivariate logistic regression models were estimated which included them simultaneously in the equations. Multivariate models of lifetime syphilis exposure are not estimated because this infection is predicted from a single proximal risk factor (number of lifetime casual sex partners). In this modeling, HIV was predicted from androphilic sexual orientation ($B=.81$; $se=.40$; $OR=2.27^*$) and dressing in the female role in public ($B=.10$; $se=.05$; $OR=1.10^*$). Hepatitis B was similarly predicted from androphilic sexual orientation ($B=.09$; $se=.03$; $OR=2.98^*$) and dressing in the female role in public ($B=.16$; $se=.06$; $OR=1.17^{**}$). Hepatitis C was predicted from psychoactive drug injection ($B=1.54$; $se=.45$; $OR=4.54^{**}$), unemployment ($B=.40$; $se=.20$; $OR=1.49^*$), and dressing as a female in public ($B=.16$; $se=.01$; $OR=1.18^*$).

DISCUSSION

A central finding of this study is the extremely high prevalence of HIV/STIs among Hispanics and African Americans MTFs combined with the surprising low prevalence of HIV/STIs among the Caucasian Americans MTFs.

It is unclear why syphilis, a classic STI transmitted only via sexual contact, was not associated with aspects of sexual behavior (androphilic sexual orientation, commercial sex partners, and committed sex partners) other than casual sex partners. It is likewise unclear why the lifetime number of committed sex partners had no impact on STIs efficiently transmitted via sexual contact (HIV, syphilis and hepatitis B).

There has been some speculation that intramuscular injection of feminizing hormones might be a risk factor for HIV/STIs. Injection of feminizing hormones was not associated with HIV/STI in this study, and we conclude that the impact of intramuscular injections on HIV/STIs is either extremely weak or non-existent among Hispanic or African American MTFs.

The extent to which hepatitis C is sexually transmitted is currently debated.²¹ In this study, lifetime number of commercial sex partners (sex work) was indeed associated with hepatitis C in bivariate models of these two variables, but not in multivariate modeling with statistical controls for substance use and unemployment. We conclude that the impact of sex work on hepatitis C is either extremely weak or nonexistent among Hispanic and African American MTFs. The duration and extent of lifetime gender abuse (psychological and physical) was not associated with HIV/STIs among the Hispanic and African American MTFs in this study.

The most robust risk factor for HIV/STIs, among the Hispanic and African American MTFs in this study, was the social expression of transgender identity (measured as gender identity disclosure and dressing in female attire). Those MTFs who live out their social lives in the male role are apparently unlikely to contract HIV/STIs. In contrast, those who presented in the female gender role at an early age, and dress accordingly, were more likely to become infected with HIV or some other STI. This finding is consistent with previous research associating HIV infection with a greater involvement in the transgender community measured as a commitment to a transgender (transvestite) lifestyle and social interaction mostly within transgender (transvestite) networks.²² MTF who do not socially express their gender identity are different from those who do so because of a combination of personal selection and societal forces. Because of dispositional factors or early socialization, some MTFs may have a greater need than others to express their gender identity at an early age. Once they are “out” to others and live their lives in the female gender role they may become increasingly marginalized in a social world where transgenderism is condoned and often desired (sex work). The identification of unemployment in the bivariate and some of the multivariate models as a STI risk factor suggests that normative employment roles may be difficult to sustain for MTFs who are at high risk. MTFs may initially drift into sex work because it allows them to express themselves in the context of sexual practices and social roles highly symbolic of their gender identity²³

The risk factors associated with HIV/STIs among the ethnic minority MTFs were strikingly virtually absent among the Caucasian American MTFs in this study. Androphilic sexual orientation, commercial sex partners (sex work) and the social expression of transgender identity were consistently associated with HIV among the ethnic minority MTF, but infrequently reported by the Caucasian American MTFs. The differences in HIV across these ethnic groups may be largely attributable to ethnic differences in these risks.

The findings of this study indicate that improved HIV/STI prevention is urgently needed for Hispanics and African Americans MTFs. This prevention should be broadly formulated and incorporate multiple components designed to address the complex and diverse issues

confronting ethnic minority transgender persons. This prevention should focus on a key risk factor for HIV/STI in this population -- the social expression of transgender identity. The affirmation of gender identity is a dominate issue in the lives of transgender persons. Approaches to HIV prevention should be devised which promote the affirmation of gender identity while simultaneously avoiding the high risk behaviors too often associated with it.²⁴

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Table 1

Logistic Regression Modeling of HIV/STIs among MTFs of Color

	Actual Range			HIV			Syphilis			Hepatitis B			Hepatitis C		
	B	SE	OR	B	SE	OR	B	SE	OR	B	SE	OR	B	SE	OR
Commercial Sex Partners	0-70	.01	1.02*	.01	.01	1.01	.03	.01	1.03**	.03	.01	1.03**	.03	.01	1.03**
Casual Sex Partners	0-90	.01	1.02	.02	.01	1.02	.02	.01	1.04**	.02	.01	1.02	-.04	.02	.96
Committed Sex Partners	0-5	.23	1.17	.15	.23	1.17	.03	.25	1.03	.36	.24	1.42	-.17	.34	.84
Psychoactive drug injection	0-2	.34	1.00	.00	.34	1.00	-.12	.36	.86	-.19	.33	.82	1.81	.42	6.10**
Hormone injection	0-37	.02	1.03	.03	.02	1.03	.03	.02	1.02	.03	.02	1.03	.03	.02	1.03
Hispanic	0-1	.25	.93	-.07	.25	.93	.45	.32	1.56	-.11	.27	.90	.84	.42	2.32**
Androphillic	0-1	.43	2.60*	.96	.43	2.60*	1.16	.63	3.24	1.52	.58	4.58**	1.26	.78	3.53
Substance use	0-207	.01	1.01	.01	.00	1.01	.01	.00	1.01	.01	.00	1.01	.02	.00	1.02**
Gender abuse	0-19	.03	1.02	.02	.03	1.02	.02	.03	1.02	-.01	.03	.99	.04	.04	1.04
Unemployment	0-3	.13	1.36*	.31	.13	1.36*	.18	.15	1.19	.33	.14	1.38*	.67	.19	1.96**
Gender identity disclosure	0-41	.01	1.02*	.02	.01	1.02*	.02	.01	1.02	.04	.02	1.04*	.08	.02	1.08**
Female attire in public	0-10	.05	1.16*	.15	.05	1.16*	.07	.05	1.08	.23	.05	1.26**	.23	.07	1.26

Base N of 367 with missing data less than 5%.

All associations adjusted for current age.

**
p=.01

*
p=.05 (two sided).