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Male to Female and Female to Male Transgender Persons have Different Sexual Risk Behaviors Yet Similar Rates of STDs and HIV

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Abstract The epidemiology of STDs and HIV among male-to-female (MTF) and female-to-male (FTM) transgender persons is limited, which makes prevention for transgender populations challenging. We examined data collected at visits for all self-identified MTF and FTM patients at the municipal STD clinic in San Francisco from January 1, 2006 to December 31, 2009. We compared demographic and socio-behavioral characteristics, as well as STD and HIV positivity and history of previous STD. Despite demographic and behavioral risk differences, there were no differences in STD positivity or HIV prevalence between MTF and FTM. A more complete understanding of the prevention needs for transgender persons is needed.

Keywords Transgender · Male-to-female · Female-to-male · Sexually transmitted diseases · Epidemiology

Introduction

Transgender (TG) is an umbrella term that refers to persons "whose gender identity, expression, or behavior does not conform to societal gender norms associated with sex at birth" [1]. While data is often sparse describing the health outcomes of TG persons, they are perceived to be at high risk for both sexually transmitted diseases (STDs) and HIV [2]. Male-to-female (MTF) TG, particularly, have been shown to be at increased risk for HIV [3, 4]. MTF often have an injecting history (either through illicit drug use and/or hormone use), as well as limited access to health care. Furthermore, a large proportion of MTF TG report a history of sex work [3]. Prevalence of HIV-infection among MTF has been estimated in a handful of studies. In a study of HIV prevalence among TG in three cities across the United States, 12% of MTF were newly diagnosed with an HIV infection [5]. In a study by Clements-Nolle and colleagues [2], 35% of MTF participants from San Francisco were HIV-infected.

While several studies have assessed HIV-infection risk among MTF, limited data has been published on risk behaviors of female-to-male (FTM) transgender persons. In a study by Kenagy et al. [6] FTM in Philadelphia and Chicago were significantly less likely than MTF to have used protection during their last sexual encounter and FTM were significantly more likely to have engaged in high risk sexual activities in the previous 3 months after controlling for demographic variables, though it was unclear what high-risk activities were reported. However, Clements-Nolle et al. [2] found lower rates of recent risk behavior among FTM than their MTF counterparts in the study, though infrequent condom use was seen among over two-thirds of FTM engaging in receptive vaginal sex.

Given the limited available data, prevention and program planning for STDs and HIV among TG populations is particularly challenging.

The purpose of this study is to describe and compare the socio-demographic and behavioral characteristics, as well as the STD and HIV prevalences among MTF and FTM patient-visits at San Francisco City Clinic.

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Methods

We examined data collected at STD clinic visits for a new problem (new symptoms, check-up, partner with a known STD, or referral to the clinic) for all patients seen at San Francisco City Clinic, the only municipal STD clinic in San Francisco, from January 1, 2006 to December 31, 2009. Patients self-identified as either MTF or FTM. All visitors to City Clinic are seen by a clinician and undergo a physical exam. Patient HIV and STD risk behavior data are collected through a standardized interview conducted by the clinician and entered into an electronic medical record. STD/HIV testing is ordered based on reported risk and may include: rapid and standard HIV antibody testing, with pooled PCR for identification of acute HIV, syphilis serologic testing, Nucleic Acid Amplification Testing (NAAT) for *N. gonorrhoeae* (gonorrhea) and *C. trachomatis* (chlamydia) at urogenital, rectal, and pharyngeal sites (Aptima Combo 2, Gen-Probe Inc. San Diego, CA), and PAP and wet mount testing (BV and trichomoniasis) for patients with a cervix. Urogenital NAAT was performed using vaginal swab specimens when a FTM patient had a biological vagina. Clinicians can order any/all of these tests based on patient risk history.

We compared demographic and socio-behavioral characteristics among TG patient-visits, including age, race/ethnicity, number of partners in the previous 3 months, injection drug use, and self-reported transactional sex (receiving drugs or sex for money). Additionally, we compared STD (chlamydia, gonorrhea, early syphilis) and HIV positivity among TG visits where testing for these infections occurred. HIV positivity was defined as the proportion of patient-visits where a person either was known to be HIV-infected or tested positive. Patients were matched to the San Francisco STD registry to identify a history of chlamydia, gonorrhea, and early syphilis within the 12 months prior to their visit. All analyses were based on visits and not individuals. Pearson's χ^2 and Fisher's exact tests were used to compare categorical data. Kruskal–Wallis tests were used to compare continuous data.

Analyses were done using SAS version 9.1 (SAS Institute Inc., Cary, NC). As these were de-identified medical records undergoing retrospective analyses, this study was considered exempt from human subjects considerations in accordance with the Code of Federal Regulations, Title 45.

Results

During the analytic period, there were 69 FTM and 223 MTF clinic visits (Table 1). The majority of patients (56.9%) had only one clinic visit during the study time frame. 19.7% of patients had 2 visits during the time period and 9.5% had 3 visits. Approximately 14% of patients had four or more visits during the time frame; the greatest number of visits by a single patient during this period was 13.

The median age at FTM patient-visits was 28 years. FTM patient-visits had a significantly younger median age than MTF patient-visits, which was 31 years ($\chi^2 = 6.42$, $P = 0.014$). The racial and ethnic make-up of the two populations was significantly different ($\chi^2 = 96.74$, $P < 0.0001$). Approximately two-thirds of FTM visits were among whites compared to 19% for MTF. Similar proportions of FTM and MTF identified as Asian and Black at the visits. There were no Hispanic FTM patient-visits identified in this study. HIV-infection status did not differ significantly between FTM and MTF patient-visits. Approximately 11% of MTF and 10% of FTM in the study were HIV-infected. FTM were more likely than MTF patient-visits to have reported a new symptom as the reason for seeking care ($\chi^2 = 8.68$, $P = 0.0032$).

Patients were significantly more likely to report ever having used injection drugs (17.0% vs. 4.4%, $\chi^2 = 7.20$, $P = 0.007$) at MTF visits, compared to FTM visits. FTM patient-visits were more likely to report female partners in the prior 3 months ($\chi^2 = 31.96$, $P < 0.0001$), while MTF patient-visits were more likely to report male partners in the past 3 months ($\chi^2 = 7.21$, $P = 0.007$). There was no statistical difference among reported unprotected sex in the 3 months prior to the visit. Self-reported transactional sex was more common among MTF than FTM patient-visits (56.5% vs. 23.2%, $\chi^2 = 24.15$, $P < 0.0001$).

Positivity for rectal, pharyngeal, and urogenital gonorrhea did not differ between FTM and MTF patient-visits. While pharyngeal and rectal chlamydia diagnoses did not differ among TG visits, FTM were more likely to have been diagnosed with urogenital chlamydia ($P = 0.0584$, Fisher's exact test [FET]). Additionally, neither early syphilis nor HIV diagnoses differed between FTM and MTF patient-visits. There were no differences among patients at FTM and MTF patient-visits for a history of rectal, urogenital, or pharyngeal gonorrhea in the prior 12 months. FTM patient-visits were more likely to be associated with a history of urogenital chlamydia ($P = 0.0128$, FET). However, there was no difference in previous pharyngeal or rectal chlamydia diagnoses. Additionally, there was no significant difference in history of early syphilis.

Discussion

It is estimated that there are approximately 1,800 transgender persons in San Francisco [7], of which 340 (18.9%) were living with HIV/AIDS in 2008 [8]. Although a small proportion of the larger population of San Francisco, TG

	MTF n (%)	FTM n (%)	χ^2	P value
Total	223 (76.4)	69 (23.6)		
Age in years (mean/median)	32.3 (31)	31.5 (28)	6.419	0.0113
Race/ethnicity				
Asian	28 (12.6)	9 (13.04)	96.742	<0.0001
Black	21 (9.4)	7 (10.1)		
Hispanic	131 (58.7)	0		
White	42 (18.8)	53 (76.8)		
Native American	1 (0.45)	0		
HIV status				
Positive	25 (11.2)	7 (10.1)	0.514	0.7735
Negative	192 (86.1)	59 (85.5)		
Unknown	6 (2.7)	3 (4.4)		
Reason for visit				
New symptom	86 (38.6)	41 (59.4)	8.684	0.0032
Check-up	150 (67.3)	51 (73.9)	1.227	0.2681
Injection drug use	38 (17.0)	3 (4.4)	7.202	0.0073
Diagnosis at visit[b]				
Rectal gonorrhea	9 (6.3)	1 (3.7)	[a]	1.0
Urogenital gonorrhea	3 (2.0)	0	[a]	1.0
Pharyngeal gonorrhea	5 (3.5)	2 (4.9)	[a]	0.6517
Rectal chlamydia	6 (4.2)	3 (11.1)	[a]	0.1573
Urogenital chlamydia	0	2 (4.2)	[a]	0.0584
Pharyngeal chlamydia	3 (2.1)	1 (2.44)	[a]	1.0
Syphilis morbidity	4 (2.4)	1 (2.1)	[a]	1.0
Syphilis titer	7 (4.2)	7 (4.2)	[a]	1.0
HIV	3 (1.4)	2 (2.9)	[a]	0.3381
STD history in past 12 months				
Rectal gonorrhea	15 (6.53)	3 (4.4)	[a]	0.5788
Urogenital gonorrhea	4 (1.8)	2 (2.9)	[a]	0.6293
Pharyngeal gonorrhea	20 (9.0)	6 (8.7)	0.0104	0.9188
Rectal chlamydia	6 (2.7)	3 (4.4)	[a]	0.4454
Urogenital chlamydia	0	3 (4.4)	[a]	0.0128
Pharyngeal chlamydia	11 (4.9)	1 (1.5)	[a]	0.3057
Syphilis	4 (1.8)	1 (1.5)	[a]	1.0
Male partners in past 3 months	16.7 (5)	4.5 (3)	7.210	0.0073
Female partners in past 3 months	0.1 (0)	0.8 (0)	31.956	<0.0001
Unprotected sex in past 3 months	117 (52.5)	34 (48.6)	0.324	0.5695
Transactional sex	126 (56.5)	16 (23.2)	24.146	<0.0001

Table 1 Demographic characteristics of Male-to-Female (MTF) and Female-to-Male (FTM) patient-visits at San Francisco City Clinic, January 1, 2006 to December 31, 2009

[a] Fisher's exact test

[b] Among patients that had appropriate test for diagnosis

persons are disproportionately affected by HIV/AIDS. Limited data exist on TG populations, especially stratified by MTF and FTM. Here we examined data on TG visits to the municipal STD clinic. Although we identified a number of important behavioral differences between FTM and MTF TG, positivity for a new HIV or STD diagnosis did not differ between the two groups. These data suggest that both FTM and MTF TG populations are in need of enhanced prevention interventions designed to reduce new STD and HIV diagnoses.

The majority of MTF (56.5%) in this study reported ever receiving drugs or sex for money, compared to 23.2% of FTM. In the study by Schulden et al. [5] 43.3% of MTF reported commercial sex work, and among San Francisco MTF of color, 85.4% reported ever engaging in sex work [4]. Little to no data, however, has been published on transactional sex among FTM. Although much more common among MTF patients, both populations of TG reported high rates of sex work. Given employment discrimination and social stigma directed towards TG persons

[4, 9], these populations may be left with limited opportunities to earn a living outside of sex work.

We found that MTF were more likely to report ever having used injection drugs compared to FTM. We could not distinguish from our data whether patients were reporting injection of illicit drugs versus hormones or silicone. In a study by Schulden et al. [5] 32.7% of MTF reported injection of hormones in the previous 12 months while only 6.8% of MTF reported street drug injection during the same time period. Likewise in a meta analysis of 29 studies, 12% of MTF reported street drug injection use while 27% reported injection of hormones and 24% reported injection of silicone [1]. Regardless, MTF TG seen at our STD clinic may be at increased risk for parenterally transmitted infections such as HIV and Hepatitis C.

Prevalence of HIV-infection was high among both FTM than MTF seen at City Clinic. However, the proportion of HIV-infected TG persons was not as high as in other published reports. In a study of TG in San Francisco 35% of MTF participants were HIV-infected compared to 2% of FTM participants [2]. In that study, however, persons were recruited from street settings, bars, social gatherings, and agency referrals. The targeted sampling and respondent-driven sampling may have identified more high-risk individuals while our sample was restricted to individuals seeking care at the municipal STD clinic.

While there were no differences among gonococcal infections, higher rates of urogenital chlamydial infections were found among FTM. FTM were also more likely to have had a history of urogenital chlamydia; however, there were not significantly higher rates of chlamydial infections at other anatomical sites. At City Clinic, chlamydia and gonorrhea testing is ordered for patients based on reported sexual activity (oral, vaginal, and anal sex). The proportion of patients with a urogenital test in the previous year did not differ between MTF and FTM (data not shown). Given this, it is unclear why higher positivity of urogenital CT during the study period and also in the prior year was seen in FTM compared to MTF. Additional research in this area would help elucidate these differential findings.

There were several limitations to this descriptive analysis. First, this study used visits rather than patients as the unit of analysis. Several patients had multiple visits, which resulted in overrepresentation of possibly higher risk patients. Sixteen patients had at least 4 visits during the time frame (range 1–12). However, 56% of patients only had one visit during the study period. Secondly, there were very few FTM in this study; the majority of the visits were among MTF. However, the study was still able to highlight some of the significant differences in risk behaviors among these two populations. Additionally, FTM and MTF

self-identified at registration. Therefore, TG patients that identified as male or female were not included in this analysis. The data included in this analysis are from patients who sought services at our STD clinic and likely do not represent FTM and MTF TG persons in San Francisco.

Our data support the notion that TG patients are at increased risk for HIV and STD, and that while behavioral risks for these infection differ between MTF and FTM patients, the burden of disease is high in both groups. Surveillance for STDs and HIV among TG persons is critical in planning prevention activities and to guarantee that sufficient resources are devoted to these populations. Given that TG patients are at high risk for HIV and STD, this population should be routinely screened for HIV and STD as well as offered prevention services. Additionally, ensuring that MTF and FTM patients are systematically counted and analyzed in epidemiologic studies is the first step to reducing excess disease in these populations.

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