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Characteristics of transgender individuals entering substance abuse treatment



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HIGHLIGHTS

- We compared transgender and cisgender individuals in substance abuse treatment.
- Transgender individuals reported more health problems.
- Transgender individuals evidenced psychosocial differences.
- Transgender individuals evidence strengths and challenges to inform treatment.

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ABSTRACT

Little is known about the needs or characteristics of transgender individuals in substance abuse treatment settings. Transgender ($n = 199$) and non-transgender (cisgender, $n = 13,440$) individuals were compared on psychosocial factors related to treatment, health risk behaviors, medical and mental health status and utilization, and substance use behaviors within a database that documented individuals entering substance abuse treatment in San Francisco, CA from 2007 to 2009 using logistic and linear regression analyses (run separately by identified gender). Transgender men (assigned birth sex of female) differed from cisgender men across many psychosocial factors, including having more recent employment, less legal system involvement, greater incidence of living with a substance abuser, and greater family conflict, while transgender women (assigned birth sex of male) were less likely to have minor children than cisgender women. Transgender women reported greater needle use, and HIV testing rates were greater among transgender women. Transgender men and women reported higher rates of physical health problems, mental health diagnoses, and psychiatric medications, but there were no differences in service utilization. There were no differences in substance use behaviors except that transgender women were more likely to endorse primary methamphetamine use. Transgender individuals evidence unique strengths and challenges that could inform targeted services in substance abuse treatment.

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1. Introduction

Little is known about the substance use behaviors of transgender¹ persons as national substance use surveillance systems and epidemiological surveys predominantly assume that all participants are “cisgender,” meaning that a participant's gender is congruent with the sex assigned at birth, even though transgender individuals are estimated to comprise between 0.3 and 0.6% of the population (Conron, Scott, Stowell, & Landers, 2012). Recent evidence from state-level health surveillance

systems indicates that transgender persons, relative to their cisgender counterparts, are at elevated risk for smoking cigarettes, although not at elevated risk for binge drinking (Conron et al., 2012). A meta-analysis of available research indicates high rates of substance use among transgender individuals (Herbst et al., 2008), while local needs assessment research of transgender individuals in Washington, DC identified high rates of substance use disorders among the transgender community (Xavier, 2000). Taken together, this suggests that transgender individuals may have a high need for substance abuse treatment, but specific needs or profiles of transgender individuals in treatment are unknown. Previous studies examining substance abuse treatment programs were unable to conduct meaningful comparisons of transgender and cisgender individuals, as the transgender sample was too small (Cochran & Cauce, 2006; Cochran, Peavy, & Santa, 2008). In sum, we know very little about substance use or substance abuse treatment needs among the

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¹ The term “transgender” can have multiple meanings; it is commonly used to describe people who express their gender in ways that are incongruent with their biological sex and/or society's dichotomous, male-or-female conceptualization of gender.

transgender population, but the limited evidence suggests that transgender individuals may be at increased risk for substance use and correspondingly have substance abuse treatment needs.

Meyer's minority stress theory (Meyer, 2003), originally developed to explain increased mental health and substance use risk among lesbian, gay, and bisexual individuals, posits that members of minority groups may experience additional stress as a result of stigma associated with their minority group membership. This model was applied to transgender individuals (Hendricks & Testa, 2012), and suggests that increased experiences of prejudice, expectations of experiencing prejudice, concealment of one's minority status, and internalization of social stigma are processes that put transgender individuals at risk for poorer health, substance use, and mental health outcomes. Research indicates that transgender individuals experience increased prejudice, in the form of extremely high rates of physical abuse, sexual assault, employment discrimination (Herbst et al., 2008), and harassment (Factor & Rothblum, 2008; Grant, Mottet, & Tanis, 2011). Additionally, research suggests high rates of concealment of gender identity among transgender people (Maguen, Shipherd, Harris, & Welch, 2007) in an effort to avoid conflict, harassment and intimidation (Beemyn & Rankin, 2011). Taken together, these findings suggest that transgender individuals may be subject to minority stress and may therefore experience increased severity of substance use and poorer mental health and health outcomes. In line with this theory, meta-analytic evidence estimates that transgender individuals, in particular male to female individuals (individuals assigned birth sex of male but with an identified gender of female), are at elevated risk for HIV and sexually transmitted disease infection (Herbst et al., 2008). Additionally, emerging evidence demonstrates that among transgender persons, there are higher rates of non-medical use of prescription drugs among those experiencing discrimination based on transgender identity, or mood or anxiety symptoms (Benotsch et al., 2013).

The present study advances the research by comparing characteristics of transgender and cisgender persons entering substance abuse treatment in order to provide a profile of the transgender population on characteristics that could influence substance abuse treatment. To our knowledge, this is the first investigation to make such comparisons and as such our analyses are exploratory. Using existing theory and research we anticipated that after controlling for age, ethnicity, and race, transgender individuals would endorse unique psychosocial characteristics related to treatment including less paid work, higher legal system involvement, higher likelihood of living with a substance user, fewer children under 17, less involvement in recovery oriented activities, and more family conflict. In addition, based on prior research and theory it was expected that transgender individuals would evidence increased risk for engagement in health risk behaviors and report greater medical and mental health problems and healthcare service utilization. While exploratory in nature due to limited available research, we anticipated that there would be differences in primary substance for which treatment was being sought and route of administration for transgender individuals. Given that psychosocial challenges faced by transgender men and women can differ considerably (Lev, 2004), we considered transgender men and women separately.

2. Methods

This study used data from the County of San Francisco, and included admission records for all clients entering publically funded substance abuse treatment services at one of up to 62 programs in the County of San Francisco from July 2007 through December 2009 ($N = 14,015$). The database was compiled from the mandatory entries of substance abuse counselors on the characteristics of their clients, obtained from clients at intake. The County of San Francisco released a de-identified version of the database to our research team to facilitate this research.

This study was exempt from the University of California Committee on Human Research review, as it used de-identified data.

Within the database, clients had unique identifiers to prevent the duplication of client records. For clients who sought treatment during the specified time period, data on multiple treatment episodes within the county were available. For each individual, the most recent treatment episode was selected for use in these analyses (from 107,470 total treatment episodes).

2.1. Measures

The database included questions from the California Outcomes Measurement System (CALOMS). CALOMS is a California statewide data collection system that was designed to meet multiple data recording and reporting requirements including: Treatment Episode Data Sets, California Alcohol and Drug Data Set, and National Outcome Measures. CALOMS was implemented in 2006 to provide a consistent form of measurement across California to evaluate substance abuse treatment programs. CALOMS queries multiple areas including: client race, ethnicity, employment and educational status, legal system involvement (e.g., not involved with the legal system versus on probation, parole, diversion, or awaiting trial), whether the individual lives with a substance user, parental status, whether the individual is involved in activities supportive of recovery (such as 12-step meetings), needle use, whether or not the individual has been tested for HIV, self reported Hepatitis C and sexually transmitted disease status, hospital and emergency room use, whether or not the individual has a mental health diagnosis, medication use for mental health, inpatient and emergency mental health services used, primary drug for which the individual is seeking treatment and frequency of use, age that this substance was first used, and mode of administration of this substance. CALOMS data are recorded upon client admission based on client self-report. For clients who are in the same treatment program for more than one year, an annual update may replace initial client admission information (this was done before the data was released to the researchers). Many variables are measured over the 30 days prior to admission, treatment update, or discharge (for example, for substance use measurement the question is "how many days in the past 30 days has the client used the primary drug?" and when measuring mental health emergency room use, the question is "how many times in the past 30 days has the client received outpatient emergency services for mental health needs?"). CALOMS data has been used in multiple studies reported in peer-reviewed literature (Brecht & Urada, 2011; Conner, Hampton, Hunter, & Urada, 2011; Evans, Jaffe, Urada, & Anglin, 2012; Gonzales, Brecht, Mooney, & Rawson, 2011; Swartz, 2010). It has also undergone a complete independent evaluation by Integrated Substance Abuse Programs at the University of California, Los Angeles (Rawson, Gonzales, Brecht, Crèvecoeur-MacPhail, & Hemberg, 2008).

Questions querying gender identity and sexual orientation are not included in CALOMS. The County of San Francisco added these questions to the data collection for their county's programs. Thus, gender identity and sexual orientation data are not available at the state level, only at the county level. When reporting gender identity, participants were offered four options: "male to female," "female to male," "not transgender," and "decline to answer." The term female to male is used to denote an individual with an assigned birth sex of female and identified gender of male, while the term male to female indicates an assigned birth sex of male and identification with the female gender. For the purpose of this study, individuals who identified as male to female were designated transgender women, while individuals who identified as female to male were designated transgender men. Individuals who endorsed "decline to answer" when gender identity was queried could represent both transgender individuals who do not represent a dichotomous gender identification and individuals who do not understand the question. Thus, individuals who declined to answer the question about gender identity are not included in this study. Participants had six

Table 1
Demographic and referral source by gender and transgender status.

	Total (N = 14,015)	Cisgender women (n = 4011)	Transgender women (n = 146)	Comparisons among women	Cisgender men (n = 9429)	Transgender men (n = 53)	Comparisons among men
Age (M, SD)	38.31 (13.54)	35.36 (13.73)	37.78 (11.78)	$p = .025$	39.27 (13.20)	26.92 (10.79)	$p < .001$
Reported sex (n, %)							
Male	9774 (69.7%)	n/a	72 (49.3%)		9429 (100%)	23 (43.4%)	
Female	4193 (29.9%)	4011 (100%)	60 (41.1%)		n/a	9 (17.0%)	
Other	46 (0.3%)	n/a	14 (9.6%)		n/a	20 (37.7%)	
Unknown	2 (0.01%)	n/a	0 (0.0%)		n/a	1 (1.9%)	
Race (n, %)				$p = .151^a$			$p = .008^a$
White	5039 (36.0%)	1284 (32.0%)	55 (37.7%)		3494 (37.1%)	29 (54.7%)	
Black	5069 (36.2%)	1558 (38.8%)	39 (26.7%)		3344 (35.5%)	6 (11.3%)	
Native American/Alaska native	186 (1.3%)	74 (1.8%)	4 (2.7%)		104 (1.1%)	0 (0.0%)	
Asian American/Pacific Islander	771 (5.5%)	201 (5.0%)	5 (3.4%)		549 (5.8%)	1 (1.9%)	
Multi racial	722 (5.2%)	282 (7.0%)	14 (9.6%)		411 (4.4%)	8 (15.1%)	
Other race	2227 (15.9%)	612 (15.3%)	29 (19.9%)		1526 (16.2%)	9 (17.0%)	
Ethnicity(n, %)				$p = .231^a$			$p = .135^a$
Not Hispanic	11,388 (81.3%)	3237 (80.7%)	112 (76.7%)		7692 (81.6%)	39 (73.6%)	
Mexican/Mexican American	1134 (8.1%)	336 (8.4%)	12 (8.2%)		749 (7.9%)	5 (9.4%)	
Cuban	68 (0.5%)	9 (0.2%)	4 (2.7%)		52 (0.6%)	1 (1.9%)	
Puerto Rican	197 (1.4%)	73 (1.8%)	5 (3.4%)		117 (1.2%)	0 (0.0%)	
Other Hispanic/Latino	1228 (8.8%)	356 (8.9%)	13 (8.9%)		819 (8.7%)	8 (15.1%)	
Sexual orientation(n, %)				$p < .001^a$			$p < .001^a$
Heterosexual	11,984 (85.5%)	3452 (86.1%)	76 (52.1%)		8318 (88.2%)	16 (30.2%)	
Gay male/male	868 (6.2%)	22 (0.5%)	31 (21.2%)		797 (8.5%)	12 (22.6%)	
Lesbian female/female	173 (1.2%)	156 (3.9%)	8 (5.5%)		1 (<0.1%)	4 (7.5%)	
Bisexual	523 (3.7%)	273 (6.8%)	18 (12.3%)		215 (2.3%)	9 (17.0%)	
Decline to answer	238 (1.7%)	72 (1.8%)	4 (2.7%)		62 (0.7%)	9 (17.0%)	
Unsure	95 (0.7%)	36 (0.9%)	9 (6.2%)		36 (0.4%)	3 (5.7%)	
Mean years of education (M, SD)	11.92 (2.54)	11.69 (2.54)	11.77 (2.63)	$p = .740$	12.02 (2.52)	12.19 (3.14)	$p = .127$
Referral source(n, %)							
Self	3239 (26.6%)	1185 (33.2%)	46 (35.9%)		1835 (22.8%)	19 (36.5%)	
Family or friend	501 (4.1%)	222 (6.2%)	7 (5.5%)		262 (3.2%)	4 (7.7%)	
Other substance abuse treatment	3599 (29.6%)	707 (19.8%)	20 (15.6%)		2782 (34.5%)	2 (3.8%)	
Court or criminal justice	1535 (12.6%)	330 (9.2%)	8 (6.3%)		1169 (14.5%)	3 (5.8%)	
Health, social, community service	2413 (19.8%)	759 (21.2%)	40 (31.3%)		1536 (19.0%)	18 (34.6%)	
Employer or school	544 (4.5%)	235 (6.6%)	3 (2.3%)		294 (3.6%)	3 (5.8%)	
Other	330 (2.7%)	134 (3.8%)	4 (3.1%)		186 (2.3%)	3 (5.8%)	

^a Comparisons of race, ethnicity, and sexual orientation were dichotomized (i.e., White vs. non-White, Hispanic/Latino vs. non-Hispanic/Latino, and heterosexual vs. non-heterosexual).

options when reporting their sexual orientation: “heterosexual,” “gay: male/male,” “lesbian: female/female,” “bisexual,” “decline to answer,” and “unsure.”

2.2. Participants

There were 14,015 individuals with unique identifiers. Participants received services between July 2007 and December 2009 at one or more of the substance abuse treatment programs operated or funded by the Department of Public Health of San Francisco. Participants were included if they presented for substance abuse treatment and have data in the database.

2.3. Analyses

All analyses were conducted separately by identified gender. Specifically, individuals who endorsed female sex and reported they were “not transgender” (hereafter referred to as cisgender women) were compared to individuals who endorsed “Male to female” on transgender status (hereafter referred to as transgender women). Similarly, individuals who endorsed male sex and indicated they were “not transgender” (hereafter referred to as cisgender men) were compared to individuals who endorsed “Female to male” gender identity (hereafter referred to as transgender men).

Chi-square analyses were used to identify differences in race, ethnicity, and sexual orientation for transgender and cisgender men and women; multiple regression analyses were used to identify if transgender status predicted current age. Logistic regression analyses were used to identify differences in dichotomous variables between cisgender and

transgender men and women in substance abuse treatment at admission (full listing of variables is in Tables 2 and 3). Multinomial regression analyses were used to predict primary substance of abuse (“other substance” was the reference category) and route of administration for the primary substance (“inhalation” was the reference category). Linear regression analyses used transgender status to predict continuous outcome variables (years of education, age first used primary drug). Days of use of primary drug prior to entering treatment was examined in a two part process. First chi-square analyses compared those who endorsed no use versus those who endorsed 1–30 days of use. Next, those who endorsed 1 or more days of use were retained for linear regression analyses using transgender status to predict days of use. Within all analyses (aside from chi-square analyses) age, race, and ethnicity were selected a priori to be entered into the models as covariates to control for their effects on the outcome variables of interest. Race and ethnicity were dichotomized (non-White and Hispanic were entered into the models as separate covariates) to enhance the stability of the models. Due to the large number of analyses, the alpha level was set at $p = .01$ to minimize type I error. In accordance with convention, 95% confidence intervals are reported for all analyses, but only analyses that met the more stringent $p < .01$ criterion were determined to have rejected the null hypothesis.

3. Results

3.1. Demographics and referral source

Complete demographic information and referral source for treatment is reported in Table 1; notable results or results not covered in the table

Table 2

Logistic regression comparing cisgender (reference group) and transgender women entering substance abuse treatment: adjusted for age, race, and ethnicity.

	Cisgender <i>n</i> (%)	Transgender <i>n</i> (%)	Adj. OR	95% CI
Psychosocial factors				
Paid work in past 30 days	444 (11.5%)	10 (6.9%)	0.56	0.29, 1.07
Involved with legal system	1184 (29%)	51 (34.9%)	1.35	0.95, 1.92
Living with substance user in past 30 days	462 (12.0%)	24 (16.6%)	1.42	0.90, 2.23
Children under 17	1351 (33.7%)	9 (6.2%)	0.13**	0.07, 0.25
Involved in recovery oriented activities in past 30 days	808 (20.8%)	40 (27.6%)	1.36	0.94, 1.99
Family conflict in past 30 days	526 (13.8%)	18 (12.4%)	0.93	0.56, 1.56
Health risk behaviors				
Used needles in past year	1106 (30.8%)	60 (43.8%)	1.70*	1.18, 2.43
Diagnosed with Hepatitis C	378 (9.7%)	13 (9.0%)	0.80	0.44, 1.45
Diagnosed with any sexually transmitted disease	86 (2.2%)	6 (4.1%)	1.79	0.77, 4.18
Tested for HIV	2671 (71.4%)	127 (88.2%)	2.83**	1.67, 4.81
Medical and mental health service utilization				
ER visit in last 30 days	415 (10.7%)	24 (16.6%)	1.52	0.96, 2.39
Hospital overnight for medical in past 30 days	203 (5.2%)	11 (7.6%)	1.36	0.72, 2.58
Physical health problems past 30 days	933 (24.1%)	52 (35.9%)	1.64*	1.14, 2.34
Outpatient emergency mental health care past 30 days	121 (3.1%)	6 (4.1%)	1.24	0.53, 2.87
Hospital or psychiatric facility for mental health in past 30 days	145 (3.7%)	8 (5.5%)	1.42	0.68, 2.95
Prescribed medication for mental health in past 30 days ^a	897 (23.1%)	59 (40.7%)	2.13**	1.50, 3.03
Ever diagnosed with mental illness ^a	1489 (40.0%)	88 (61.1%)	2.28**	1.60, 3.24
Substance use: Primary problem				
Alcohol	790 (19.7%)	29 (19.9%)	2.12	0.64, 7.03
Cocaine	817 (20.4%)	29 (19.9%)	2.21	0.66, 7.38
Heroin	1075 (26.8%)	32 (21.9%)	1.69	0.51, 5.59
Methamphetamine	395 (9.8%)	38 (26.0%)	6.04*	1.84, 19.90
Marijuana	369 (9.2%)	7 (4.8%)	1.85	0.46, 7.42
Other drug	182 (4.5%)	3 (2.1%)	ref	ref
Primary substance: Route of administration				
Inhaled	198 (5.5%)	7 (5.1%)	ref	ref
Injection	1061 (29.7%)	46 (33.6%)	1.16	0.51, 2.62
Oral	952 (26.6%)	32 (23.4%)	0.91	0.40, 2.10
Smoking	1363 (38.1%)	52 (38.0%)	1.18	0.53, 2.64

^a Analyses involving mental health diagnoses and medications for mental health conditions should be interpreted with caution, as many transgender individuals may have diagnoses of or medications for Gender Identity Disorder per DSM-IV-TR (American Psychiatric Association, 2000).

* $p < .01$.

** $p < .001$.

are reported here. The "Total" column in Table 1 reports demographic information for the entire sample, including individuals who did not answer gender identity questions and thus were not retained for subsequent analyses. Transgender men were younger ($M = 26.92$, $SD = 10.79$) than cisgender men ($M = 39.27$, $SD = 13.20$, $B = -12.07$, semi-partial $R^2 = .005$, $p < .001$), while there were no detectable differences between transgender and cisgender women ($M = 37.78$, $SD = 11.78$ for transgender women, $M = 35.36$, $SD = 13.73$ for cisgender women; $B = 2.49$, semi-partial $R^2 = .001$, $p = .025$). Notably, some transgender individuals reported their current sex in a manner that was congruent with their sex assigned at birth ($n = 81$, 40.7%), while others identified their current sex in a manner that was incongruent with their sex assigned at birth but consistent with their current gender identity ($n = 83$, 41.7%). Additionally, 34 (17.1%) of the transgender treatment-seekers identified their sex as "other." Most of the transgender individuals ($n = 115$, 57.8%) reported a non-White race, and some reported a Hispanic or Latino ethnicity ($n = 48$, 24.1%). Among men, transgender individuals were more likely to endorse a White race than cisgender men (non-White versus White, $X^2 [1] = 7.04$, $p = .008$) but did not differ from cisgender individuals on ethnicity (Hispanic/Latino versus non-Hispanic/Latino, $X^2 [1] = 2.24$, $p = .135$). Among women, neither race nor ethnicity differed by transgender status (non-White versus White, $X^2 [1] = 2.07$, $p = .151$; non-Hispanic/Latina versus Hispanic/Latina, $X^2 [1] = 1.43$, $p = .231$). Transgender men were far more likely to endorse non-heterosexual sexual orientations than cisgender men (61.0% versus 10.9%, $X^2 [1] = 104.11$, $p < .001$). This effect was also observed for women, with 42.9% of transgender women reporting a non-heterosexual orientation, while only 11.6% of cisgender women reported a non-heterosexual sexual orientation ($X^2 [1] = 114.54$, $p < .001$). There was no difference between transgender and cisgender men ($B =$

.508, semi-partial $R^2 < .001$, $p = .127$) or women ($B = -.066$, semi-partial $R^2 < .001$, $p = .740$) in the number of years of education. Of the entire sample, 287 individuals (2 of which were transgender) had valid dates indicating that an annual update had been performed on their treatment record, and some individuals were in treatment longer than one year without an annual update.

3.2. Psychosocial factors related to treatment

Complete results of logistic and multinomial regression analyses are documented in Tables 2 and 3. Transgender men differed from cisgender men on many psychosocial factors; they were more likely to have been paid for work in the previous 30 days, less likely to have been involved with the legal system (e.g., less likely to be on parole, probation, awaiting trial, or on diversion), more likely to be living with a substance user in the previous 30 days, and more likely to have experienced family conflict in the 30 days prior to treatment. Among women, transgender individuals were less likely to have children under the age of 17, but there were no differences on any of the other psychosocial variables.

3.3. Health risk behaviors

Transgender women were more likely than cisgender women to have used needles in the previous year and were more likely to have been tested for HIV. Transgender men had higher odds of being tested for HIV than cisgender men, but not at a level that met the criterion $p < .01$ (AdjOR = 2.28; 95% CI = 1.15, 4.51, $p = .018$). There were no detectable differences in rates of reported Hepatitis C diagnoses or sexually transmitted disease diagnoses.

Table 3

Logistic regression comparing cisgender (reference group) and transgender men entering substance abuse treatment: adjusted for age, race, and ethnicity.

	Cisgender <i>n</i> (%)	Transgender <i>n</i> (%)	Adj. OR	95% CI
Psychosocial factors				
Paid work in past 30 days	1375 (15.0%)	18 (34.6%)	2.30*	1.29, 4.12
Involved with legal system	3775 (40.2%)	6 (11.3%)	0.14**	0.06, 0.33
Living with substance user in past 30 days	886 (9.7%)	21 (40.4%)	5.26**	2.99, 9.25
Have children under 17	2024 (21.5%)	4 (7.5%)	0.31	0.11, 0.86
Involved in recovery oriented activities in past 30 days	1982 (21.6%)	16 (30.8%)	1.84	1.01, 3.34
Family conflict in past 30 days	693 (7.6%)	17 (32.7%)	4.29**	2.36, 7.81
Health risk behaviors				
Used needles in past year	2573 (28.5%)	8 (19.5%)	0.68	0.30, 1.50
Diagnosed with Hepatitis C	688 (7.5%)	2 (3.9%)	1.01	0.24, 4.26
Diagnosed with any sexually transmitted disease	180 (2.0%)	2 (3.9%)	2.24	0.53, 9.42
Tested for HIV	6411 (70.6%)	40 (78.4%)	2.28	1.15, 4.51
Medical and mental health service utilization				
ER visit in last 30 days	989 (10.8%)	6 (11.5%)	1.42	0.60, 3.36
Hospital overnight for medical in past 30 days	500 (5.4%)	3 (5.8%)	1.52	0.47, 4.96
Physical health problems past 30 days	2099 (22.8%)	17 (32.7%)	2.38*	1.30, 4.33
Outpatient emergency mental health care past 30 days	219 (2.4%)	1 (1.9%)	0.87	0.12, 6.35
Hospital or psychiatric facility for mental health in past 30 days	305 (3.3%)	4 (7.7%)	2.69	0.95, 7.59
Prescribed medication for mental health in past 30 days ^a	1583 (17.2%)	19 (36.5%)	3.30**	1.84, 5.94
Ever diagnosed with mental illness ^a	2813 (31.1%)	28 (53.8%)	2.88**	1.63, 5.08
Substance use: Primary problem				
Alcohol	2423 (25.7%)	15 (28.3%)	0.87	0.25, 3.07
Cocaine	2163 (22.9%)	8 (15.1%)	0.75	0.19, 2.95
Heroin	2220 (23.5%)	8 (15.1%)	0.70	0.18, 2.70
Methamphetamine	1025 (10.9%)	3 (5.7%)	0.29	0.06, 1.45
Marijuana	916 (9.7%)	5 (9.4%)	0.34	0.08, 1.52
Other drug	339 (3.6%)	3 (5.7%)	ref	ref
Primary substance: Route of administration				
Inhaled	594 (6.6%)	2 (4.9%)	ref	ref
Injection	2315 (25.7%)	8 (19.5%)	1.28	0.27, 6.17
Oral	2750 (30.5%)	16 (39.0%)	1.73	0.40, 7.61
Smoking	3345 (37.2%)	15 (36.6%)	1.31	0.30, 5.79

^a Analyses involving mental health diagnoses and medications for mental health conditions should be interpreted with caution, as many transgender individuals may have diagnoses of or medications for Gender Identity Disorder per DSM-IV-TR (American Psychiatric Association, 2000).

* $p < .01$.

** $p < .001$.

3.4. Medical and mental health status and service utilization

Both transgender men and women were more likely than cisgender men and women to report experiencing physical health problems in the 30 days prior to treatment. Individuals who identified as transgender had no detectable differences in emergency room (ER) visits, overnight stays for medical conditions, outpatient emergency mental health care, or psychiatric hospitalizations in the 30 days prior to treatment. Transgender men and women were more likely to report having been prescribed medication for mental health in the previous 30 days and having been diagnosed with a mental illness.

3.5. Substance use behaviors

Transgender status was not predictive of the age the individual first used the primary drug they were seeking treatment for in men (transgender $M = 15.68$, $SD = 11.67$ versus cisgender $M = 18.96$, $SD = 9.24$; $B = -.283$, semi-partial $R^2 < .001$, $p = .812$) nor in women (transgender $M = 19.47$, $SD = 9.93$ versus cisgender $M = 17.84$, $SD = 9.84$; $B = .795$, semi-partial $R^2 < .001$, $p = .261$). When considering primary substance of abuse, transgender status did not predict higher odds of a specific primary substance of abuse for men, but among women, transgender status predicted primary methamphetamine use. Neither transgender men ($X^2 [1] = 0.28$, $p = .598$) nor transgender women ($X^2 [1] = 0.00$, $p = .984$) were more or less likely than their cisgender counterparts to report having used their primary substance in the 30 days prior to treatment. Among individuals who had used their primary substance in the month prior to treatment, transgender status did not predict the number of days of use among men ($M = 13.03$, $SD = 11.52$ for transgender men, $M = 16.09$, $SD = 11.50$ for cisgender men, $B = -2.957$, semi-partial $R^2 < .001$, $p = .129$),

nor among women ($M = 13.94$, $SD = 11.71$ for transgender women, $M = 16.95$, $SD = 11.69$ for cisgender women, $B = -2.747$, semi-partial $R^2 = .002$, $p = .038$).

4. Discussion

This study identified several unique characteristics of transgender individuals entering substance abuse treatment. To our knowledge, this is the first large-scale study to examine differences between transgender and cisgender individuals who are entering substance abuse treatment. Previous studies of individuals entering substance abuse treatment that have included transgender persons had too small of a transgender sample to detect differences based on transgender status (as in Cochran & Cauce, 2006) or had to drop transgender individuals from analyses (as in Cochran et al., 2008), and the epidemiological research has not historically documented gender identity.

4.1. Demographics

Consistent with previous research (i.e., Clements-Nolle, Marx, Guzman, & Katz, 2001), individuals who identified as transgender had variable responses to reported sex and to sexual orientation. First, within the transgender groups, more individuals identified their sex as "other." It is important for substance abuse treatment providers and researchers to be careful not to provide labels for individuals wherein none fit. For example, these participants were asked to endorse either a male to female or female to male category. It is possible that these two categories do not align with the preferred gender identities of these individuals. Some individuals who do not identify with their sex assigned at birth may have "declined to answer" the question about gender identity due to the limited options available. Allowing for a

non-binary response option for gender identity can result in a wealth of responses (see Harrison, Grant, Herman, Dodge, & Imse, 2011 for a discussion), which may be more accurate to the individual.

Transgender men presenting for substance abuse treatment were considerably younger to a degree that is likely to be of clinical significance (mid-20s for transgender men versus mid 30s for transgender women and cisgender individuals). It is possible that this was a cohort trend within the San Francisco area, meaning that there were more young transgender men in this geographical area at this time, that transgender men were experiencing an earlier onset of substance abuse problems, or that this particular cohort was willing to identify as transgender at a younger age. Alternatively, this finding may suggest a willingness to seek treatment earlier. Previous research has noted a relationship between age seeking treatment and number of previous treatment episodes, with fewer episodes being associated with a younger age (Cacciola, Dugosh, & Camilleri, 2009), thus this could represent a treatment group that is more successful in an earlier episode and thus does not return to treatment for additional episodes.

4.2. Psychosocial considerations related to treatment

Transgender men evidenced strengths that may impact treatment: they were more likely to have recent paid employment and less likely to have ongoing legal issues. When considered with the younger treatment seeking age, it is possible that transgender men are entering treatment with more resources likely to support successful treatment. The finding that transgender men were less likely to have ongoing legal issues may have important implications for treatment. This suggests that transgender men may be more likely to enter treatment with a “clean slate” and less likely to have to deal with the repercussions of drug related charges during and after treatment, or of the ongoing stress associated with being on parole or probation.

Transgender men were, however, more than 5 times as likely as cisgender men to have been living with a substance abuser. This implies that transgender men may require additional support while in outpatient treatment, or when leaving residential treatment, as previous research has suggested poorer treatment outcomes for individuals in a cohabitating relationship with a substance abuser (Fals-Stewart, Birchler, & O'Farrell, 1999). Transgender individuals may also be more reliant than cisgender individuals on communities that are non-family, as they have been shown to experience their families of origin as less supportive (Factor & Rothblum, 2008) and experience high rates of rejection from families (Grant et al., 2011), thus the power of non-birth family relationships should be considered in treatment settings. Consistent with this finding, transgender men reported higher levels of family conflict than did cisgender individuals, however this effect was not observed in transgender women. Some of this effect could be related to the higher incidence of living with a substance user, as the term “family” within this question was not defined. Notably, despite previous research citing higher levels of employment related discrimination for transgender individuals (Herbst et al., 2008), within a substance abuse treatment setting, transgender women living in San Francisco did not appear to differ from cisgender women on paid days of work just prior to entering treatment, and transgender men fared better than cisgender men.

4.3. Health risk behaviors

Consistent with previous research (Edwards, Fisher, & Reynolds, 2007), transgender women reported higher rates of needle use in the past year. Despite higher levels of needle use within the last year, transgender women were not more likely to report injection use of the primary substance for which they were seeking treatment. This points to the possibility that needle use may be involved in administration of medications, such as hormones, which is consistent with previous research reporting higher rates of injection of hormones than street

drugs (Herbst et al., 2008). Future research is needed to elucidate the needle use practices of transgender women and identify the specific substances for which needles are used and/or shared. Transgender women were also more likely to have been tested for HIV. Collectively, these findings suggest that while transgender women are engaging in higher rates of needle use, they may be more likely to engage in proactive health behaviors (e.g., HIV testing). Future targeted research is necessary to clarify this relationship.

4.4. Medical and mental health status and service utilization

Greater reports of physical health problems among both transgender women and men indicate that transgender individuals entering substance abuse treatment may have unique healthcare needs that need to be addressed. One potential pathway to increased health problems among this community could be the experience of minority stress. Additional research to elucidate the role of minority stress in health outcomes for transgender individuals is warranted.

It is difficult to interpret the finding that transgender men and women have higher rates of mental health diagnoses and use of psychiatric medications, as it is not possible (within this dataset) to identify whether these diagnoses are for Gender Identity Disorder (as defined by the Diagnostic and Statistical Manual of Mental Disorders: DSM-IV-TR, American Psychiatric Association, 2000) or a different mental health disorder. Such findings may be directly related to transgender status, and not other psychiatric conditions. As such, these results should be interpreted with caution. That being said, existing research with transgender individuals does suggest that psychological distress is predictive of nonmedical use of prescription medication, which is in turn associated with illicit drug use (Benotsch et al., 2013). Overall, the findings of increased physical health problems, mental health diagnoses, and mental health medications indicate that substance abuse programs need to be prepared to link transgender clients to care for both physical and mental health.

4.5. Substance use behaviors

Transgender women were more than 6 times as likely to be seeking treatment for methamphetamine use, but aside from that there were no differences in the primary substance for which transgender and cisgender men and women were seeking treatment. Increased treatment seeking for methamphetamine use may indicate a greater need for methamphetamine prevention among transgender women. Previous research has found an association between stimulant use and substance use in the context of sexual activity among transgender women (Sevelius, Reznick, Hart, & Schwarcz, 2009). Treatment providers for transgender women should assess for and potentially address the relationship between sexual activity and methamphetamine use among this population.

4.6. Limitations

This study took place in the urban area of San Francisco, and thus the results reported here are not necessarily generalizable to other areas of the country. San Francisco is known to be more embracing of diverse gender identities than many areas of the country (evidenced by structural components such as several transgender specific health clinics and organizations) and thus represents an atypical environment for transgender individuals. It is possible that effects due to minority stress would likely be lessened in this geographic area, but this hypothesis would require additional confirmatory research. This study is also limited by self-report measures and by utilizing records obtained in a large county health data management system. As such, the data collection process was at times inconsistent (e.g., annual updates of admissions data were not performed consistently). Despite these limitations, there is no expectation that self-report or data errors would vary by

gender identity, thus any effects (over-reporting or under-reporting) are likely to be equally distributed within the sample and not to differ systematically by gender identity. It is also important to note that this is a treatment-seeking sample, which is not generalizable to all individuals with substance abuse problems. Finally, the measure of gender identity only allowed two response options for transgender individuals: FTM and MTF. Additional response options likely would have yielded more individuals who may have identified as transgender. The reporting of gender identity may be impacted by the modality in which it is collected (e.g., self-report versus computer assisted interview). While researchers have begun to discuss ways to measure gender identity in health settings (Cahill & Makadon, 2014), more research is needed on the measurement of gender identity.

4.7. Future directions

This study identified multiple differences between transgender and cisgender persons in basic demographics, psychosocial characteristics, health risk behaviors, health and mental healthcare utilization, and substance use behaviors. Despite the evidence that points to minority stress processes among the transgender community, there may also be sources of resilience among transgender people and minority communities, such as “community cohesiveness” (Meyer, 2003, p. 677), which may reduce minority stressors. This suggests that while transgender individuals may experience increased stress, they may also have unique sources of strength and resilience. This study provided an initial foundation to elucidate potential strengths within this community, while identifying important avenues for future research.

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Contributors

Annesa Flentje designed the study, obtained the data from the San Francisco Department of Public Health, ran analyses, and prepared the manuscript. Nicholas C. Heck advised on study design and interpretation and contributed to the writing of the manuscript. James L. Sorensen contributed to study design and contributed to the writing of the manuscript.

Conflict of interest

No conflict declared.

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