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Permalink

<https://escholarship.org/uc/item/2418w0mk>

Journal

LGBT Health, 4(1)

ISSN

2325-8292

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Publication Date

2017-02-01

DOI

10.1089/lgbt.2016.0097

Peer reviewed

Impact of Sexual Orientation Identity on Medical Morbidities in Male-to-Female Transgender Patients

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Abstract

Purpose: We aim to describe the relationship between sexual orientation identity and medical morbidities in a large sample of male-to-female (MTF) transgender patients.

Methods: We reviewed medical records of patients presenting for MTF sex reassignment surgery (SRS) by a single, high-volume surgeon from 2011 to 2015. Sexual attraction to men (heterosexual), women (lesbian), or both (bisexual) was asked of each patient. We examined 16 medical morbidities for this analysis.

Results: During the study period, 330 MTF transgender patients presented for SRS. The average age at the time of surgery was 38.9 (range 18–76). One hundred and one patients (32%) reported being heterosexual, 110 patients (34%) reported being lesbian, and 108 patients (34%) reported being bisexual. Lesbian patients presented for SRS at older ages (mean = 43 years old) compared with heterosexual patients (mean = 36 years old) and bisexual patients (mean = 37), $P < 0.01$. No differences were found in the majority of coexisting medical morbidities by sexual orientation identity. Lesbian patients had greater odds of having a history of depression, age-adjusted odds ratio (aOR) = 2.36, 95% confidence interval (CI) 1.26–4.40, compared with heterosexual patients. Lesbian patients had higher odds of being married or partnered, aOR = 2.31, 95% CI (1.27–4.19), compared with heterosexual patients. Heterosexual patients had higher odds of having human immunodeficiency virus (HIV), aOR = 9.07, 95% CI (1.08–76.5) compared with lesbian patients.

Conclusions: Sexual orientation identity in MTF transgender patients is variable. The majority of medical morbidities are not associated with sexual orientation identity. Although HIV and depression are common morbidities among MTF patients seeking SRS, the prevalence of these morbidities differs by sexual orientation identity, but these findings need replication. Counseling and future research initiatives in transgender care should incorporate sexual orientation identity and associated risk behavior.

Keywords: HIV, male-to-female (MTF), depression, sexual orientation, transgender

Introduction

IT IS ESTIMATED that 0.3% of the entire U.S. population identifies as transgender.¹ Among this population, health disparities are common.^{2,3} For example, male-to-female (MTF) transgender individuals are challenged with mental health illness, human immunodeficiency virus (HIV) seropositivity, and acquiring other sexually transmitted infections at higher rates than the general population.^{4,5} The MTF transgender community has traditionally had poor healthcare access and utilization.⁶ Moreover, most large-scale biomedical research does not assess gender identity

beyond male and female.⁷ As such, the true healthcare needs of these individuals are not completely known.

Clinicians are often unaware and unprepared to meet the clinical needs of the MTF transgender population.⁸ Transgender individuals face extreme social stigma and mental health issues, including major depressive disorder, posttraumatic stress disorder, and suicidality.^{4,9,10} In addition, compared with the general population, MTF transgender individuals have a substantially higher odds of HIV seropositivity (odds ratio [OR] = 48.8).^{11,12} However, most studies on transgender disparities group all MTF transgender individuals into one homogeneous group, despite recent evidence that risk factors may be

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different based on sexual orientation or attraction.¹³ For example, MTF transgender individuals who are attracted to men have higher odds of reporting HIV than MTF individuals who are attracted to women (OR=2.27).¹³ The associations between sexual orientation in MTF individuals and other medical morbidities, beyond HIV transmission, merit future research. Determining the impact of sexual orientation in this population may allow for more targeted and sensitive healthcare practices.

We aimed to describe the relationship between sexual orientation identity, demographic characteristics, and medical morbidities. We hypothesized that MTF patients who are attracted to men would have a higher prevalence of HIV, as shown in previous studies. From our clinical experience, we hypothesized that patients attracted to women tend to be older at the time of sex reassignment surgery (SRS), and thus would have greater prevalence of medical morbidities.

Methods

Study population

We conducted a retrospective review of all MTF patients presenting for primary SRS to one, high-volume surgeon from 2011 to 2015. Preoperative, intraoperative, and postoperative medical charts were reviewed for demographic and medical characteristics. All patients included in the study met the World Professional Association for Transgender Health standards for SRS.¹⁴ Only patients presenting for primary SRS were included in the study. Patients presenting for revision surgery whose primary SRS was done elsewhere were excluded from the analysis. The reason for this exclusion was that our primary predictor (sexual orientation identity) was not routinely assessed in this population. All patients in the study underwent SRS the first or second day after the preoperative clinic visit. The institutional review board at the primary surgeon's hospital approved the study.

Predictor variables

Patients reported sexual orientation identity or pattern of sexual attractions through interview by the surgeon in the preoperative visit and this was recorded on the history form. Some patients reported their sexual orientation identity (heterosexual/straight, homosexual/lesbian, bisexual, pansexual, or asexual), whereas others reported the gender to which they were sexually attracted (men only, women only, or both). All patients were grouped into three categories, herein termed sexual orientation identity, based on these interviews: male-only attraction (heterosexual), female-only attraction (lesbian), and both male and female attraction (bisexual or pansexual). Patients who reported being asexual ($n=9$) were excluded from this analysis. Sexual orientation identity was missing from two patient charts, and these were excluded from the analysis.

Outcome variables

Demographic characteristics, including age at the time of surgery, partnered status, whether or not the patient had children, the number of years on hormone replacement therapy (HRT), the first age of gender incongruent feelings, body mass index (BMI) kg/m^2 , and smoking status, were all recorded. We collected medical history (HIV status, depression, suicide attempt/ideation, anxiety, alcoholism, attention-

deficit hyperactivity disorder, hypertension, coronary artery disease, asthma, chronic obstructive pulmonary disease, diabetes mellitus, gastroesophageal reflux disease, thyroid disease [hyperthyroid or hypothyroid], history of deep vein thrombosis, benign prostatic hyperplasia [BPH], congenital genital anomaly [intersex, undescended testicles, hypospadias, 5-alpha reductase deficiency, and posterior urethral valves], and no past medical history) and past surgical history (PSH) (breast augmentation, tracheal shave, orchiectomy, vasectomy, facial feminization surgery [rhinoplasty, earlobe surgery, facelift, hairline surgery], appendectomy, cholecystectomy, hernia repair, joint surgery, dental surgery, no PSH). All medical and surgical histories were self-reported. We then reviewed the patient intake forms to ensure completeness. All patient blood pressure, height, and weight were recorded at the time of the preoperative visit. Preoperative laboratories, including an HIV test and basic chemistry panel were recorded in all patients.

Statistical methods

Data analysis was conducted using Stata v. 13.0 (Stata; StataCorp LLC, College Station, TX). Initially, demographic characteristics and medical histories were compared in our predictor groups (heterosexual, lesbian, and bisexual) using analysis of variance for continuous outcomes and Pearson chi-squared tests for categorical outcomes. We then used age-adjusted logistic regression to determine if sexual orientation identity was independently associated with our outcome variables, as age could affect one's sexual orientation in addition to increasing one's risk for medical morbidities.^{15,16} Any P values less than 0.05 were considered statistically significant, and all statistical tests were two sided.

Results

During the study period, 330 MTF transgender patients presented for SRS. The average age at the time of surgery was 38.9 (range 18–76). Demographic characteristics, medical histories, and surgical histories of our patients can be seen in Table 1. Approximately one-third of patients ($n=102$, 31%) were currently married or partnered, and one-third of patients ($n=105$, 32%) had at least one child. The average number of years on HRT before SRS was 5.4 (range 1–42). The average age at which a patient experienced gender incongruent feelings was 8.2 years old (range 2–38). Nine patients (3%) had HIV. No new HIV infections were uncovered during preoperative evaluation. Ninety-nine (30%) patients had a history of depression.

One hundred and one patients (32%) reported being heterosexual, 110 patients (34%) reported being lesbian, and 108 patients (34%) reported being bisexual. Demographic characteristics and medical/surgical histories, stratified by sexual orientation identity can be seen in Table 2. Lesbian patients presented for SRS at older ages (mean=43 years old \pm standard deviation [SD] 15.1) compared with heterosexual patients (mean=36 years old \pm SD 13.0) and bisexual patients (mean=37 \pm SD 13.8), $P<0.01$. Lesbian patients were more commonly married or partnered (47%) compared with heterosexual patients (26%) and bisexual patients (22%), $P<0.01$. A greater number of lesbian patients had at least one child at the time of surgery (43%) compared with heterosexual patients (21%) and bisexual patients (30%), $P<0.01$.

TABLE 1. MEDICAL AND DEMOGRAPHIC CHARACTERISTICS OF PATIENTS PRESENTING FOR MALE-TO-FEMALE SEX REASSIGNMENT SURGERY

	<i>All patients (n = 330)</i>
Demographics	
Age, mean (SD)	38.9 (14.3)
Married/partnered, <i>n</i> (%)	102 (31)
Children, <i>n</i> (%)	105 (32)
Years on HRT, mean (SD)	5.4 (5.6)
Age of gender incongruent feelings, mean (SD)	8.2 (5.2)
BMI, mean (SD)	25.3 (4.7)
Current smoker, <i>n</i> (%)	29 (9)
Medical history, <i>n</i> (%)	
HIV status	9 (3)
Depression	99 (30)
Suicide attempt/ideation	7 (2)
Anxiety	39 (12)
Alcoholism	8 (2)
ADHD	8 (2)
Hypertension	32 (10)
Coronary artery disease	11 (3)
Asthma	18 (6)
COPD	3 (1)
Diabetes mellitus	20 (6)
GERD	17 (5)
Thyroid disease	17 (5)
Deep vein thrombosis	3 (1)
BPH	6 (2)
Congenital genital anomaly ^a	10 (3)
No PMH	135 (41)
Surgical history, <i>n</i> (%)	
Breast augmentation	66 (20)
Tracheal shave	20 (6)
Orchiectomy	32 (10)
Vasectomy	17 (5)
Female facial feminization ^b	59 (18)
Appendectomy	21 (6)
Cholecystectomy	9 (3)
Hernia repair	21 (6)
Joint surgery	52 (16)
Dental surgery	78 (24)
No PSH	71 (22)

^aIncludes intersex, undescended testicles, hypospadias, 5-alpha reductase deficiency, and posterior urethral valves.

^bIncludes rhinoplasty, earlobe surgery, facelift, and hairline surgery.

ADHD, attention-deficit hyperactivity disorder; BMI, body mass index; BPH, benign prostatic hyperplasia; COPD, chronic obstructive pulmonary disease; GERD, gastroesophageal reflux disease; HIV, human immunodeficiency virus; HRT, hormone replacement therapy; PMH, past medical history; PSH, past surgical history; SD, standard deviation.

The majority of medical morbidities did not differ by sexual orientation identity. The prevalence of HIV was 1% in lesbian patients compared with 8% in heterosexual patients and 0% in bisexual patients, $P < 0.01$. A history of depression was more common in lesbian patients (38%) compared with heterosexual patients (22%) and bisexual patients (29%), $P = 0.03$. Breast augmentation was less common in lesbian patients (16%) compared with heterosexual patients (32%), but greater than in bisexual patients (13%), < 0.01 .

Age-adjusted ORs (aOR) for significant outcomes are displayed in Table 3. Lesbian patients had higher odds of being married or partnered, aOR = 2.31, 95% confidence interval (CI), 1.27–4.19, compared with heterosexual patients. Lesbian patients were not at greater odds of having children before surgery, aOR = 1.69, 95% CI (0.77–3.69) or being on HRT for more than 1 year, aOR = 1.34, 95% CI (0.48–3.77) compared with heterosexual patients. Lesbian patients had greater odds of having a history of depression, aOR = 2.36, 95% CI (1.26–4.40) compared with heterosexual patients. Heterosexual patients had a higher odds of having a history of HIV, aOR = 9.07, 95% CI (1.08–76.5), and a history of breast augmentation, aOR = 3.31, 95% CI (1.63–6.72) compared with lesbian patients.

Discussion

We evaluated the association of sexual orientation identity on various demographic, preoperative variables, and medical morbidities among a large group of MTF patients presenting for SRS. The majority of medical morbidities did not differ by sexual orientation identity. We found that although HIV and depression are common morbidities, the prevalence of these morbidities differs by sexual orientation identity. In particular, heterosexual MTF patients had a greater prevalence of HIV, and lesbian patients had a greater prevalence of depression. Lesbian patients were at greater odds of being married or partnered, but not for having children before SRS. To our knowledge, this is the first large study of sexual orientation identity in a cohort of MTF patients presenting for SRS and has important implications for all those who participate in the care of MTF patients.

A higher prevalence of HIV among MTF transgender individuals who are attracted to men has been documented previously.¹³ Our findings are consistent with previous research. Transgender women who are attracted to men may have a unique set of risk factors for HIV transmission, including high-risk male partners. In the MTF transgender population who are sex workers, risk factors for HIV include illicit hormone or silicone injections, need for gender affirmation, or systematic discrimination and violence.¹⁷ How these risk factors differ by sexual orientation remains to be studied. HIV prevention strategies in the transgender community should incorporate sexual orientation identity as we demonstrate it to be a risk factor among MTF individuals who are attracted to men.

The prevalence of depression among transgender individuals is high and is often associated with increased levels of gender dysphoria.^{10,18,19} One Canadian study of 191 MTF patients estimated the prevalence of depression to be 61%.¹⁸ Factors associated with depressive symptoms included living outside of urban areas, being unemployed, and being subjected to transphobia.¹⁸ In another study of 220 Latina MTF transgender individuals, 35% reported current severe depressive symptomology, which was associated with perceived discrimination.¹⁹ Social support, transphobia, suicidal ideation, and levels of income and education have also been independently associated with depression in MTF transgender individuals with a history of sex work.²⁰ In our study, approximately one-third of patients reported a history of depression. We found that being attracted to women only was an independent risk factor for reporting depression. Perhaps, those patients attracted to women have

TABLE 2. MEDICAL AND DEMOGRAPHIC CHARACTERISTICS OF PATIENTS PRESENTING FOR MALE-TO-FEMALE SEX REASSIGNMENT SURGERY BY SEXUAL ORIENTATION IDENTITY* (N= 319)

	<i>Men only attraction (n = 101)</i>	<i>Women only attraction (n = 110)</i>	<i>Both (n = 108)</i>	<i>P value</i>
Demographics				
Age, mean (SD) ^a	36 (13)	43 (15)	37 (14)	<0.01
Married/partnered, n (%)	26 (26)	51 (47)	24 (22)	<0.01
Children, n (%)	21 (21)	47 (43)	32 (30)	<0.01
Years on HRT, mean (SD) ^a	6.9 (7.3)	5.0 (5.0)	4.5 (4.2)	<0.01
Age of gender incongruent feelings, mean (SD) ^a	7 (4)	9 (5)	9 (6)	0.08
BMI, mean (SD) ^a	26 (6)	26 (4)	25 (4)	0.07
Current smoker, n (%)	13 (13)	6 (6)	10 (9)	0.45
Medical history, n (%)				
HIV status	8 (8)	1 (1)	0	<0.01
Depression	22 (22)	42 (38)	31 (29)	0.03
Suicide attempt/ideation	1 (1)	5 (5)	1 (1)	0.12
Anxiety	11 (11)	17 (16)	9 (8)	0.25
Alcoholism	3 (3)	4 (4)	1 (1)	0.41
ADHD	1 (1)	4 (4)	3 (3)	0.46
Hypertension	8 (8)	16 (15)	8 (7)	0.15
Coronary artery disease	1 (1)	6 (5)	4 (4)	0.20
Asthma	3 (3)	10 (9)	5 (5)	0.13
COPD	1 (1)	0 (0)	2 (2)	0.37
Diabetes mellitus	6 (6)	5 (5)	8 (7)	0.67
GERD	7 (7)	7 (6)	3 (3)	0.34
Thyroid disease	5 (5)	9 (8)	3 (3)	0.20
Deep vein thrombosis	1 (1)	1 (1)	1 (1)	1.00
BPH	0 (0)	4 (4)	2 (2)	0.15
Congenital genital anomaly	0 (0)	5 (5)	4 (4)	0.11
No PMH	51 (51)	30 (27)	48 (44)	<0.01
Surgical history, n (%)				
Breast augmentation	32 (32)	18 (16)	14 (13)	<0.01
Tracheal shave	4 (4)	8 (7)	8 (7)	0.51
Orchiectomy	8 (8)	14 (13)	10 (9)	0.48
Vasectomy	5 (5)	3 (3)	8 (7)	0.29
Female facial feminization	19 (19)	20 (18)	16 (15)	0.71
Appendectomy	6 (6)	8 (7)	6 (6)	0.86
Cholecystectomy	5 (5)	2 (2)	2 (2)	0.30
Hernia repair	3 (3)	8 (7)	9 (8)	0.24
Joint surgery	9 (9)	20 (18)	20 (19)	0.09
Dental surgery	20 (20)	29 (26)	26 (24)	0.53
No PSH	24 (24)	19 (17)	26 (24)	0.39

^aContinuous variables analyzed through one-way analysis of variance.

*See Methods for definitions.

TABLE 3. AGE-ADJUSTED LOGISTIC REGRESSION FOR VARIOUS DEMOGRAPHICS, MEDICAL MORBIDITIES, AND SURGICAL HISTORY BY SEXUAL ORIENTATION IDENTITY (N= 319)

	<i>Men only OR (95% CI)</i>	<i>Women only OR (95% CI)</i>	<i>Both OR (95% CI)</i>
Demographics			
Married/partnered	1.00 (reference)	2.31 (1.27–4.19)	1.01 (1.00–1.03)
Children	1.00 (reference)	1.69 (0.77–3.69)	1.64 (0.74–3.66)
More than 1-year HRT	1.00 (reference)	1.34 (0.48–3.77)	1.03 (0.99–89.6)
Medical history			
HIV status	9.07 (1.08–76.5)	1.00 (reference)	—
Depression	1.00 (reference)	2.36 (1.26–4.40)	1.46 (0.78–2.75)
Surgical history			
Breast augmentation	3.31 (1.63–6.72)	1.00 (reference)	0.95 (0.44–2.07)

All ORs are adjusted for age, all binary outcomes (y/n).
CI, confidence interval; OR, odds ratio.

increased perceptions of discrimination since they face stigma with regard to their gender and sexual orientation (as these patients often identify as lesbian). This is further supported by the fact that bisexual patients had higher odds of depression than heterosexual patients, although this finding in our study was not statistically significant. Although depressive symptoms should be assessed in all MTF transgender patients, those patients who identify as lesbian might face additional social stigma and require additional intervention strategies. Our data support the notion that increased awareness of depression in lesbian MTF patients is warranted.

Although lesbian MTF patients have a higher prevalence of depression, these patients were also more likely to be currently married or partnered at the time of SRS. Having a stable relationship for MTF patients is an avenue for social support. SRS is both physically and emotionally taxing, therefore, a strong social support system is necessary.²¹ Both the long-term benefits of SRS and the impact of SRS on sexual orientation identity are still unclear.^{10,22,23} Patients' partners at the time of SRS may provide additional support during their recovery period and enhance quality of life after surgery. In a study of 218 patients who underwent SRS from 1972 to 1992 in Sweden, one of the greatest factors associated with regret of the surgery was lack of support from the patient's family.²⁴ The influence of home support on SRS outcomes requires future research; however, we provide evidence that these support systems may differ by sexual orientation identity. Of note, being married or partnered may not be a true proxy for social support, as friends and other family members may also provide such support. Support from friends and other family members were not assessed in this study.

Sexual orientation identity was not associated with other morbidities, including BMI, smoking status, and other common medical problems such as hypertension, diabetes, BPH, etc. This finding is in contrast to sexual orientation in cisgender individuals. Lesbian and bisexual women have been shown to have a higher risk of smoking, excessive drinking, cardiovascular disease, and obesity.²⁵ The interplay between sexual orientation and medical morbidities may differ by gender identity. Although lesbian MTF patients in our study tended to report more morbidity across the board, the mean age of these patients was 5–10 years older. Medical and surgical morbidity in transgender patients exists. Continued efforts are necessary to increase provider awareness and cultural sensitivity.²⁶

Interestingly, none of the sexual orientation identity groups was more likely to report a history of children. Overall, one-third of our sample had children before SRS. One case series reported that sexual orientation among transsexual women may influence rates of sperm preservation, as those patients attracted to women may be more likely to preserve sperm.²⁷ In an Internet study of transsexual women, 51% would consider sperm freezing if they knew it was an option, but 90% would not delay transition due to loss of fertility.²⁸ As SRS leads to irreversible sterility, reproductive counseling is paramount before surgery. We suggest that all patients regardless of sexual orientation be fully counseled on sperm preservation options.

Several studies have shown that sexual orientation changes over time among cisgender and transgender individuals.^{29,30} Some transgender individuals change sexual orientation at the time of their physical transformation.³¹ Transgender individuals also have a wide range of sexual attraction ranging from men only, women only, both men and women, neither,

all genders (i.e., pansexual), or specifically other transgender men and women.^{32,33} Classifying patients into only three categories, as done in our analysis, and during one period of time can be problematic. Nonetheless, our patients had transitioned over an average of 5 years before presenting for SRS. The long-term impact SRS has on sexual orientation is not known. A recent review suggested that sexual orientation does not impact transition-related health outcomes.³³

This study is not without limitations. Of note, the prevalence of HIV in our sample is much lower than the estimates reported in the general MTF transgender population.¹¹ Our cohort was limited to MTF patients presenting for SRS and did not capture the nonsurgical population of MTF transgender individuals, which may differ by HIV risk factors. Such differences between the surgical and nonsurgical transgender populations may include socioeconomic status or greater access to healthcare. However, because differential selection was based on our outcome (in this case HIV or depression) and not our predictor (sexual orientation identity), the associations found in our study are internally valid with respect to selection bias. Sexual orientation identity is challenging to classify into traditional roles. For example, those who identified as bisexual or pansexual were combined into the same group for our analysis. The results of this study might be less generalizable to the entire MTF transgender population. All medical histories were self-reported, beyond HIV, which was confirmed with laboratory testing. Depressive symptoms were not assessed using validated questionnaires. The temporal sequence of sexual orientation identity and medical morbidities cannot be determined. As many medical morbidities were tested in our analysis, false positive findings are possible and replication studies are necessary to confirm these findings. Despite these limitations, we believe that assessing sexual orientation identity in MTF transgender patients will impact risk stratification and patient counseling.

Conclusion

Sexual orientation identity in MTF transgender patients is variable. The majority of medical morbidities are not associated with sexual orientation identity. Although HIV and depression are common morbidities among MTF patients seeking SRS, the prevalence of these morbidities differs by sexual orientation identity, but these findings need replication. Counseling and future research initiatives in transgender care should incorporate sexual orientation identity and associated risk behavior.

Author Disclosure Statement

No competing financial interests exist.

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