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Health Disparities, Risk Behaviors and Healthcare Utilization Among Transgender Women in Los Angeles County: A Comparison from 1998–1999 to 2015–2016

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Abstract

Data from two studies of transgender women in Los Angeles County that used the same methodology and survey assessment (Study 1: 1998–1999, N = 244; Study 2: 2015–2016, N = 271), compared structural determinants of health, HIV/STI prevalence, HIV risk behaviors, substance use, gender confirmation procedures, and perceived discrimination and harassment/abuse across a 17-year time period. Findings demonstrated that participants in the latter study reported significantly higher access to healthcare insurance and prescription hormones. However, participants in the latter study also reported lower levels of income; and, elevated prevalence of homelessness, HIV and lifetime STIs, receptive condomless anal intercourse with casual partner(s), and reported physical harassment/abuse. Given the timeframe of these results, these findings elucidate specific areas of transgender women’s health and risk profiles that improved or worsened across 17 years. While healthcare access has improved, transgender women continue to face significant barriers to good health, indicating the need for increased attention to this population.

Keywords Transgender women · Health disparities · HIV risk behaviors · Healthcare utilization

Introduction

Transgender women face numerous adverse health disparities in comparison to cisgender individuals, including higher rates of substance use; HIV and STI prevalence, incidence and risk behaviors; and, mental health disorders including depression, anxiety and suicidality [1–5]. Due to structural barriers (i.e., laws and policies) and interpersonal

stigmatization (e.g., prejudice, harassment, abuse) [6], transgender women are more likely than other adult populations to experience unemployment, homelessness, and to earn lower income [7–9], all of which are discrete predictors of poor health. The cyclical nature of these health disparities is perhaps most evident in the high rates of transgender women who engage in sex work [10–13]: forced out of legitimate economies due to discrimination, transgender women often turn to sex work to survive, which in turn puts them at increased risk for HIV and STIs, violence, and incarceration [10–12, 14].

Health disparities and significant structural and interpersonal barriers to good health have been well-documented among transgender women; however, no study has investigated how these health disparities and determinants have improved or worsened over time. The last decade saw major changes in the social, political, and medical context around transgender issues [15] such as HIV prevention and biomedical interventions including the availability of Pre-exposure Prophylaxis (PrEP) [16]; increased transgender visibility in the media and popular culture [17]; and transgender-specific policies such as “Bathroom Bills” making headline news [18]. Despite these cultural and medical shifts, it is unclear

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what the impact of these changes, if any, is on the health of transgender communities. A search of longitudinal and comparison studies of transgender health finds that almost all were published after 2010 and utilized short-term follow-up or comparison (i.e., less than 1–4 years) [19–21]. An incomplete understanding of how risk profiles and health outcomes among transgender women have or have not changed over longer periods of time limits the ability of public health professionals to implement targeted interventions focused on high-risk transgender populations. For instance, while there have been extensive efforts in the past decade to increase health research and implement tailored interventions for transgender women [22–27], the impact of these efforts remains unclear without data from comparison studies across time.

This study fills a much-needed gap in the literature as the first comparison study of transgender women's health disparities, HIV risk behaviors, substance use, healthcare utilization, experiences of discrimination and HIV prevalence over two distal time points. Using data from two studies of transgender women in Los Angeles County (LAC) that used the same methodology and survey assessment (Study 1: 1998–1999, N = 244; Study 2: 2015–2016, N = 271) we sought to compare how structural determinants of health (i.e., housing, healthcare insurance, income), HIV and STI prevalence, HIV risk behaviors, substance use, gender confirmation procedures, and perceived discrimination and harassment/abuse differed across a 17-year time period. The aim of this investigation was to understand how transgender health disparities in LAC have improved or worsened across multiple categories over time, so as to better inform health interventions focused on the unmet needs of transgender women.

Methods

Participants

Potential participants were deemed eligible to participate if they were 18 years of age or older; lived in LAC; and identified as a transgender woman or as a woman who was assigned the male sex at birth. Given the diversity in transgender populations over the 17 years since Study 1, and the aim to recruit moderate- and high-risk transgender women, the following eligibility was added to Study 2: Use of alcohol (any amount) or an illicit substance (including non-medically prescribed marijuana) or unprotected anal intercourse (either insertive or receptive) in the past 6 months. The added eligibility criterion was deemed necessary to enroll a similar sample profile in Study 2 as was enrolled in Study 1. Due to the cultural shift in transgender visibility over the 17 year period, without the added

eligibility criterion no- and low-risk transgender women could enroll in the study. Yet, it was critical to enroll only moderate- and high-risk transgender women to address the aim of the study.

Procedures

Participants in Study 1 were recruited from February 1998 to January 1999 and participants in Study 2 were recruited from July 2015 to September 2016. Potential participants for both studies were recruited via street- and venue-based outreach and from collaborating community-based organizations that provided services to transgender women; most of the agencies were consistent between the two studies. All research assistants identified as a transgender woman (four part-time research assistants for Study 1 and two full-time research assistants for Study 2) and were highly trained on non-invasive outreach and recruitment strategies, and how to maintain participant safety and confidentiality in the field. Following screening and consent, participants were administered The Los Angeles Transgender Health Survey (described below). In Study 1, the research assistants administered a paper assessment; whereas, in Study 2, participants received an audio computer-assisted self-interview (ACASI) version of the same assessment. Both versions of the assessment took approximately 45 min to complete. Participants in Study 1 were compensated \$15 for their time and effort after completing the assessment; participants in Study 2 were compensated \$50. Study 1 was approved by the Health Research Association Institutional Review Board and Study 2 was approved by the Friends Research Institute Institutional Review Board and the UCLA South Campus General Institutional Review Board. These Boards provided oversight for all study activities of the respective studies.

Assessment

The Los Angeles Transgender Health Survey

Developed by the first author and colleagues in 1997, in consultation with transgender women community members, and updated as community needs have changed, the Los Angeles Transgender Health Survey consists of seven modules: screening, sociodemographic characteristics, health care access and medical history including HIV services and hormone use/misuse, sexual behaviors (at all stages of gender transition) including HIV risk/protective behaviors, substance use, legal and psychosocial issues including stigma and discrimination, and HIV prevention.

Analytic Approach

Individual-level data from Study 1 were unavailable; however, the reported prevalence for each categorical variable was used to calculate count data. Fractional values of count data were rounded up to the greatest whole number and prevalence estimates were adjusted accordingly. Individual-level data for Study 2 were available and utilized to derive prevalence estimates. Chi square tests for categorical variables were conducted to test for differences in sociodemographic factors, structural health determinants, HIV and STI prevalence and risk behaviors, substance use, gender confirmation procedures, and perceived discrimination by study (Study 1: 1998–1999 vs. Study 2: 2015–2016). To facilitate interpretation of results for greater than 2×2 contingency tables, two proportions z-tests were performed for each category level to compare observed proportions between Study 1 and Study 2. SAS 9.4 was used to conduct analyses.

Results

Participant Sociodemographics

Weighted averages from the two samples (not presented in tables) demonstrated that participants were predominantly young (18–29 years = 47.2%), Hispanic/Latina (45.7%) or non-African American/Black/non-Hispanic/Latina (35.8%), heterosexual (75.2%), low income (<\$1000/month = 66.9%), and had lower overall educational attainment (high school diploma/GED or less = 71.9%). Compared to the participants in Study 1, participants in Study 2 were slightly older, more likely to be African American/Black but less likely to be Non-Black/Non-Hispanic, and more likely to have lower income ($p < 0.0001$). There was no difference in reported sexual identification between the two studies ($p = 0.869$; Table 1).

Structural Determinants of Health: Housing Status, Healthcare Insurance, and Income Source

Compared to participants in Study 1, participants in Study 2 were significantly more likely to report being homeless (4.1% vs. 14.8%, $p < 0.0001$; Table 1). Access to healthcare insurance was significantly higher in Study 2 compared to Study 1 (34.8% vs. 77.1%, $p < 0.0001$). Prevalence of participants with public healthcare insurance (i.e., MediCal, Medicare, Medicaid) increased substantially (17.6% vs. 56.5%), while participants with private healthcare insurance (i.e., CoveredCA, employer, HMO) decreased slightly (17.2% vs. 12.2%). The weighted average of reported sex work as a main source of income in the past 6 months was 42.9%: participants in Study 2 had a lower prevalence of reported sex

work (36.2%) compared to participants in Study 1 (49.6%, $p < 0.05$).

HIV and STI Prevalence

HIV prevalence was higher in the Study 2 sample compared to Study 1 (22.1% vs. 35.4%, $p < 0.0001$; Table 1). Lifetime prevalence of STIs was also higher in Study 2 ($p < 0.05$). Prevalence of gonorrhea (13.1% vs. 24%, $p < .05$) and syphilis (11.9% vs. 26.3%, $p < 0.0001$) both doubled between the two samples. Lifetime prevalence of Chlamydia had the highest magnitude change between samples, with prevalence eight-fold higher in Study 2 (2% vs. 17.7%, $p < 0.0001$). Lifetime prevalence of genital/rectal warts (7% vs. 9.2%) and genital herpes (4.1% vs. 5.9%) were slightly higher in the Study 2 sample compared to Study 1, but these differences were not significant.

HIV Risk Behaviors and Substance Use

The prevalence of self-reported engagement in receptive condomless anal intercourse (Table 2) did not differ significantly between the two samples in overall Chi square analysis ($p = 0.306$). However, compared to Study 1, participants in Study 2 reported higher prevalence of condomless anal intercourse with every partner type: with any partner(s) (47.1% vs. 55.7%), main partner(s) (27.9% vs. 32.1%), casual partner(s) (19.6% vs. 32.8%), and exchange partner(s), i.e., individuals with whom they exchanged sex for things they needed such as money, drugs, shelter or food (13.9% vs. 18.8%). As well, inspection of z-test results demonstrates that proportion of participants engaging in condomless anal intercourse was significantly higher with casual partner(s) ($p < 0.005$) and marginally significantly higher with any partner ($p = 0.06$).

Prevalence of substance use (Table 2) in the past 6 months differed significantly between samples ($p < 0.0001$), but direction of change varied by substance. Participants in Study 2 were less likely to use alcohol (77.1% vs. 40.2%, $p < 0.0001$), but more likely to use cannabis (38.4% vs. 54.2%, $p < 0.005$). Prevalence of methamphetamine use did not change between samples (~27.5%). Participants in Study 2 were significantly less likely to use cocaine (25.0% vs. 10.0%, $p < 0.0001$) and crack cocaine (15.2% vs. 4.1%, $p < 0.0001$).

Hormone Use and Gender Confirmation Surgeries

As demonstrated in Table 2, non-medically prescribed/non-medically monitored hormone use was significantly lower in Study 2 compared to Study 1 (36.1% vs. 9.9%; $p < 0.0001$). Prevalence of participants having had gender confirmation surgeries was also lower overall from Study

Table 1 Participant sociodemographic characteristics and structural health determinants

	Study 1: 1998–1999 (N = 244)		Study 2: 2015–2016 (N = 271)		Sig
	n	(%)	n	(%)	X ² (p value) z-test [p value]
Age					39.8 (<0.0001)***
18–29	132	54.1	109	40.2	9.38 [0.0022]**
30–39	85	34.8	68	25.1	5.38 [0.0204]*
40+	27	11.1	94	34.7	38.55 [<0.0001]***
Racial/ethnic identity					47.2 (<0.0001)***
Hispanic/Latina	120	49.2	114	42.1	2.34 [0.1259]
African American/black	17	7.0	82	30.3	43.37 [<0.0001]***
Non-black/Non-hispanic	107	43.9	75	27.7	14.01 [0.0002]***
Sexual orientation					0.72 (0.869)
Heterosexual/straight	187	76.6	199	73.7	0.54 [0.4611]
Homosexual/gay/lesbian	22	15.3	28	10.4	0.13 [0.7230]
Bisexual	14	5.7	17	6.3	0.01 [0.9446]
Other/don't know/refused	21	8.6	27	9.9	0.14 [0.7062]
Education level					15.9 (0.0003)***
Less than high school/GED	114	46.7	99	36.5	5.09 [0.0241]*
High school/GED	54	22.1	104	38.4	15.18 [<0.0001]***
Greater than high school/GED	76	31.1	68	25.1	2.05 [0.1526]
Income (past 30 days)					65.8 (<0.0001)***
< \$1000	122	50.0	211	83.7	42.40 [<0.0001]***
\$1000–\$2999	98	40.2	28	11.1	60.23 [<0.0001]***
> \$3000	24	9.8	13	5.2	4.16 [0.0413]*
HIV status					26.2 (<0.0001)***
HIV negative	189	77.5	159	58.7	19.83 [<0.0001]***
HIV positive	54	22.1	96	35.4	10.36 [0.0013]**
Unknown/refused	1	.04	16	5.9	10.48 [0.0012]**
STI history (Lifetime) ^a					14.3 (0.0063)*
Gonorrhea	32	13.1	65	24.0	9.23 [0.0024]**
Syphilis	29	11.9	71	26.3	15.91 [<0.0001]***
Chlamydia	5	2.0	48	17.7	32.44 [<0.0001]***
Genital/rectal warts	17	7.0	25	9.2	0.60 [0.4392]
Genital herpes	10	4.1	16	5.9	0.54 [0.4636]
Housing status					16.7 (<0.0001)***
Not homeless	234	95.9	231	85.2	–
Homeless	10	4.1	40	14.8	–
Healthcare insurance					102.9 (<0.0001)***
Has healthcare insurance	85	34.8	209	77.1	92.00 [<0.0001]***
Does not have healthcare insurance	156	63.9	54	19.9	101.16 [<0.0001]***
Unknown/refused	3	1.2	8	3.0	1.09 [0.2961]
Type of healthcare insurance					29.2 (<0.0001)***
MediCal/medicare/medicaid	43	17.6	153	56.5	–
Private/employer/HMO	42	17.2	33	12.2	–
Sex work as main income source (past 6 months)					9.5 (0.002)**
Sex work as main source of income	121	49.6	98	36.2	–
Sex work not main source of income	123	50.4	173	63.8	–

^aMultiple responses possible

*p value < 0.05

**p value < 0.005

***p value < 0.0005

Table 2 HIV risk behaviors, substance use and gender confirmation procedures

	Study 1: 1998–1999 (N = 244)		Study 2: 2015–2016 (N = 271)		Sig X ² (p value) z-test[p value]
	n	(%)	n	(%)	
Receptive condomless anal intercourse ^a					2.4 (.306)
With main partner(s)	68	27.9	87	32.1	.09 [0.3422]
With casual partner(s)	48	19.6	89	32.8	10.74 [0.0011]**
With exchange partner(s)	34	13.9	51	18.8	1.88 [0.1700]
Any	115	47.1	151	55.7	3.46 [0.063]
Substance use (past 6 months) ^a					54.1 (<0.0001)***
Alcohol	188	77.1	109	40.2	69.83 [<0.0001]***
Cannabis	95	38.9	147	54.2	11.47 [0.0007]**
Methamphetamine	68	27.9	74	27.3	0.002 [0.965]
Cocaine	61	25.0	27	10.0	19.44 [<0.0001]***
Crack	37	15.2	11	4.1	17.44 [<0.0001]***
Poppers	24	9.8	14	5.2	3.44 [0.0635]
Ecstasy	17	7.0	19	7.0	<.0001[1.00]
Hormone use (past 6 months)					64.3 (<0.0001)***
Non-prescribed	88	36.1	27	9.9	–
Prescribed/medically monitored	54	22.1	132	48.7	–
Gender confirmation surgery ^a					9.0 (0.029)*
Breast augmentation	51	21.0	32	11.8	7.12 [0.0073]*
Rhinoplasty	44	18.0	17	6.3	15.90 [<0.0001]***
Other facial surgery	15	6.1	8	3.0	2.37 [0.1237]
Genital reconstruction (Vaginoplasty)	7	2.9	13	4.8	0.81 [0.3668]

^aMultiple responses possible

*p value < 0.05

**p value < 0.005

***p value < 0.0005

1 to Study 2 ($p < 0.05$). This significant difference was primarily accounted for by the decrease between Study 1 and Study 2 of participants reporting rhinoplasty (18% vs. 6.3%, $p < 0.0001$).

Perceived Discrimination and Abuse

Chi square analysis found that overall perceived discrimination was not significantly higher from Study 1 to Study 2 ($p = 0.819$; Table 3), but significant increases were observed in rates of hiring discrimination (47.1% vs. 64.2%, $p < 0.0001$), being fired from a job (29.1% vs. 40.2%, $p < 0.05$), housing discrimination (29.9% vs. 42.2%, $p < 0.005$), and discrimination in accessing health services (13.1% vs. 21.4%, $p < 0.05$). Marginal significance was observed for increase in discrimination in accessing HIV prevention services (4.1% vs. 8.5%, $p = 0.06$). Reported lifetime harassment and abuse remained similarly high between samples, with a similar prevalence of reported verbal harassment/abuse (79.9% vs. 77.5%). Two proportions z-test

demonstrated a significant increase in physical harassment/abuse between Study 1 and Study 2 (47.1% vs. 56.8%, $p < 0.05$).

Discussion

To our knowledge, this study represents the first investigation of how structural determinants of health and risk behaviors among transgender women improved or worsened across a substantial time period, i.e., close to two decades. Findings reported here utilized data from two similar samples of transgender women in LAC using the same outreach and recruitment strategies, the same survey assessment, and both studies conducted by the same investigator (first author). These findings highlight that transgender women continue to face substantial barriers to achieving optimum or even satisfactory health outcomes. Although participants in Study 2 reported greater access to healthcare insurance and utilization, these participants also reported lower income; elevated prevalence of homelessness, HIV and lifetime STIs,

Table 3 Perceived discrimination and abuse/harassment

	Study 1: 1998–1999 (N = 244)		Study 2: 2015–2016 (N = 271)		Sig X^2 (p value) z-test [p value]
	n	(%)	n	(%)	
Perceived discrimination (Lifetime) ^a					1.5 (0.819)
Job (hiring)	115	47.1	174	64.2	14.52 [0.0001]***
Job (fired)	71	29.1	109	40.2	6.51 [0.0108]*
Housing	73	29.9	115	42.4	8.15 [0.0043]**
Health services	32	13.1	58	21.4	5.55 [0.0184]*
HIV prevention services	10	4.1	23	8.5	3.42 [0.0642]
Abuse/harassment (Lifetime) ^a					1.9 (0.169)
Verbal	195	79.9	210	77.5	0.32 [0.5732]
Physical	115	47.1	154	56.8	4.46 [0.0348]*

^aMultiple responses possible

*p value < 0.05

**p value < 0.005

***p value < 0.0005

condomless anal intercourse, perceived discrimination and harassment/abuse; and a similar prevalence of methamphetamine use. Given the nature of these results across time, the findings presented here help to elucidate specific areas of transgender women's health and risk profiles that improved or worsened across 17 years, thus allowing for targeted public health interventions to assist in improving the health of transgender women.

Improved Determinants of Health between Study 1 and Study 2

Healthcare Insurance and Healthcare Access

Prevalence of transgender women with access to healthcare insurance increased from just over one-third in Study 1 to over three-fourths in Study 2. This increase was likely accounted for by a growth in access to public healthcare insurance (i.e., MediCal, Medicare, Medicaid). MediCal, California's Medicaid program, saw a massive expansion under the Affordable Care Act in 2014 [28]. It is a notable commentary on the Affordable Care Act that some of the most vulnerable Californians, such as moderate- and high-risk transgender women, were able to access public healthcare insurance.

Access to public healthcare insurance likely played a prominent role in increasing healthcare access between studies; changes in medically monitored hormone use between Study 1 and Study 2 highlighted positive signs that healthcare access among transgender women increased between the two studies. Nearly half of the sample in Study 2 reported access to prescribed or medically monitored hormones compared to one-fifth of Study 1. Further, non-prescribed and

non-medically monitored hormone use, including injectable hormones and "fillers," decreased significantly, from over one-third (36.1%) in Study 1 to approximately one-in-ten (9.9%) in Study 2. This is a promising finding given the known adverse health effects of unsupervised hormone use, including blood clots, elevated liver enzymes, gallstones, decrease in hemoglobin, and depression [29, 30]. These findings point to the fact that along with healthcare insurance, healthcare access substantially increased, which is encouraging given the considerable health disparities faced by moderate- and high-risk transgender women.

Worsened Health Determinants between Study 1 and Study 2

Homelessness and Income

While the aforementioned improvements in healthcare insurance and healthcare access were indeed promising, there remained numerous health determinants among transgender women that worsened over the 17 year period. Transgender women in both studies faced substantial structural (i.e., housing, healthcare insurance, income) and interpersonal (i.e., discrimination, harassment, abuse) barriers to good health. Compared to the Study 1 sample, prevalence of homelessness in the Study 2 sample was nearly three-fold higher, and income was substantially lower, with 83.7% of participants reporting a monthly income of less than \$1000. In addition to the marked decrease in income between studies, increased homelessness among Study 2 participants might be partially explained by the housing market in LAC: with surging rental prices and lack of subsidized housing vacancies, LAC's general homeless population has increased in the observed time

period [31]. There are limited data documenting the size of the homeless population in the 1990s: in 1994, the U.S. Department of Housing and Urban Development estimated that the size of the homeless population in LAC was between 17,200 and 42,600 [32]. In 2016, the Los Angeles Homeless Services Authority estimated that the total size of the LAC homeless population was 46,874, which was 5.7% higher than the previous year [31]. The increased number of very low-income transgender women in Study 2, coupled with the LAC housing market likely explains the rise in homelessness between studies.

HIV and STI Prevalence and Sexual Risk Behaviors

HIV prevalence and lifetime prevalence of STIs (i.e., gonorrhea, syphilis, Chlamydia) increased significantly from Study 1 to Study 2. Furthermore, compared to Study 1, Study 2 evidenced elevated rates of receptive condomless anal intercourse with every partner type, including main partner(s), casual partner(s), and exchange partner(s). Engagement in condomless anal intercourse was significantly higher with casual partner(s) ($p < 0.005$) and marginally significantly higher with any partner ($p = 0.06$). These results highlight that sexual risk behaviors among transgender women remain a key barrier to adequate prevention of HIV and STIs. As of the last available data in 2011, the LAC Department of Public Health, Division of HIV and STD Programs (DHSP) managed over 200 contracts with 65 community-based organizations and ten county departments dedicated to HIV and STI prevention, testing, and services [33]. While HIV incidence among other adult populations in LAC and among MSM have decreased, STI rates have increased over the past decade [34]. These findings and currently available data from DHSP demonstrate that transgender women report higher prevalence of HIV and STIs [35].

During the Study 1 years, HIV prevention funding for transgender individuals was not a separate identified population and these services were funded under “gay men.” By the Study 2 years, DHSP was allocating \$1,392,000 specifically to HIV prevention services for transgender individuals (personal communication via email, 23 June 2017, DHSP). However, the increase in HIV and STI prevalence and sexual risk behaviors across samples highlights that, despite identifying transgender individuals as a funding priority and increased funding efforts, HIV, STIs, and sexual risk behaviors are both highly prevalent and difficult to prevent among transgender women. HIV and STI prevention efforts targeting moderate- and high-risk transgender women must take into account the numerous structural barriers faced by the population, and ensure that HIV and STI prevention efforts consider and target this difficult-to-reach population. For example, while Pre-exposure Prophylaxis (PrEP) is an effective biomedical HIV prevention strategy, the social and

structural barriers that transgender women experience are associated with limited PrEP adherence [36, 37].

Substance Use

Prior studies have demonstrated the associations between substance use and HIV and STI risk behaviors among transgender women [38–41]. The current study found mixed results regarding substance use among transgender women. Compared to participants in Study 1, transgender women in Study 2 were less likely to drink alcohol, but more likely to use marijuana, both of which have been linked to condomless anal intercourse and HIV risk among transgender women [2, 42]. The higher rate of reported marijuana use is most likely a result in the policy shift related to medical marijuana in LAC, which contributed to increased availability and public acceptance of marijuana use.

Furthermore, methamphetamine use remained high and stable across both studies, with approximately one-fourth of both samples reporting methamphetamine use in the past 6 months; a troubling finding given the strong association between methamphetamine use and HIV sexual risk behaviors across numerous samples including transgender women [38, 43–45]. It is interesting to note that the consistently high rate of methamphetamine use is very similar to that found among samples of men who have sex with men in LAC, with approximately one-quarter of both populations reporting methamphetamine use [46]. Results from the current study indicate that high rates of substance use have persisted among transgender women in LAC, elucidating that HIV prevention efforts must target multiple levels of risk including both sexual risk and substance use behaviors.

Discrimination, Harassment and Abuse

Compared to Study 1, transgender women in Study 2 experienced similar or higher lifetime rates of discrimination, harassment and abuse in every category surveyed. Lifetime housing discrimination and perceived employment discrimination due to participants’ transgender identity, or presentation, significantly increased, with over half of participants in Study 2 reporting some form of discrimination in either category. Transgender women in both studies reported severely high prevalence of verbal and physical harassment and abuse. Verbal harassment and abuse was reported by over three-quarters of participants in both studies, and more than half of the Study 2 participants reported experiencing physical harassment and abuse, a significant increase from Study 1. Among transgender women, experiences of harassment and abuse are associated with anxiety, depression, PTSD, and suicidality [47–50]. These mental health correlates have been reported as significant barriers to employment and general functioning among transgender

individuals [6, 51]; thus, placing transgender individuals at increased risk of poverty [3, 8] and its associated detrimental health consequences. Given these results, the cyclical and syndemic nature of structural and interpersonal barriers to adequate health and wellbeing among transgender women is immense.

Reported discrimination in access to healthcare (including refusal of care) significantly increased from 13.1% in Study 1 to 21.4% in Study 2 ($p < 0.05$). Across numerous studies of transgender women, discrimination in accessing healthcare services has been linked to healthcare delay and avoidance and overall worse health outcomes, including lack of preventative healthcare [52, 53]. While the aforementioned increase in access to healthcare insurance in Study 2 was a promising finding, the concurrent higher prevalence of reported healthcare discrimination, as well as the decrease in gender-related surgeries, with the exception of genital reconstruction (i.e., vaginoplasty), highlighted the continued need for transgender-specific clinical and cultural competency trainings for healthcare providers. Additionally, with increased coverage of gender confirmation surgeries under the Affordable Care Act, the visibility of transgender persons in healthcare settings will simultaneously increase, further emphasizing the need for transgender-competent healthcare.

Limitations

As individual-level data from Study 1 were unavailable, differences between groups could only be measured utilizing count data, which led to the inability to conduct more robust, multivariate analyses. Although the two samples had some consistency regarding sociodemographic characteristics, data were not longitudinal, both studies used convenience sampling, and any significant differences between samples may be as a result of demographic or sampling differences, or the added eligibility criterion in Study 2, rather than true differences in health and risk behaviors. Furthermore, measures of health service utilization other than medically monitored hormone use were not collected; therefore, we cannot make any inferences regarding how structural, interpersonal and risk behavior differences across samples affected access to healthcare among the samples. These data were limited in the self-reported nature of the survey (e.g., potential recall bias and social desirability bias in Study 1) and sampling bias given the highly stigmatized and hard-to-reach nature of the population. An important limitation of both studies is that data were collected in LAC and may not be representative of transgender women in other regions of the U.S. Additionally, some participants were recruited through collaborating community-based organizations and;

therefore, their data may not be representative of transgender women who do not access social service agencies. As well, the high-risk nature of the sample makes these findings unlikely to be generalizable to transgender women who are less vulnerable than the participants in this study. Finally, while we can draw inferences about the effects of cultural, medical, and social shifts (e.g., Affordable Care Act) on differences between study populations, future studies should attempt to examine longitudinal correlates between health determinants and policy/social/cultural changes affecting transgender women. Nevertheless, these findings represent the only long-term comparison data of transgender women and, therefore, provide an important comparison of how structural determinants of health, HIV and STI prevalence, HIV risk behaviors and substance use, gender confirmation procedures, and perceived discrimination and harassment/abuse have improved or worsened over 17 years in LAC.

Conclusions

Findings presented here shed light on the numerous issues still faced by transgender women 17 years after the initial study, particularly homelessness, low education and income, HIV and STI risk, substance use, and perceived discrimination and harassment/abuse. The marked increase in access to healthcare insurance coupled with prescribed and medically monitored hormones highlights the positive impact of government-funded healthcare insurance programs for this vulnerable population. However, these findings must be tempered against the concurrent increase in reported prevalence of perceived healthcare discrimination. To improve transgender women's healthcare outcomes, public health professionals must be trained and culturally competent to work with transgender women, and strive to implement health-related interventions that are specifically tailored to address the immense structural and interpersonal barriers faced by this population.

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Compliance with Ethical Standards

Conflict of interest The authors declare no conflicts of interest.

Ethical Approval All procedures in the study involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable standards.

Informed Consent Written informed consent was obtained from all participants.

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