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**Short Report: Characterizing HIV Care Among a Clinical Sample of Transgender Women  
Living with HIV**

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### Abstract

*Introduction:* This study aimed to characterize and identify factors associated with HIV care among trans women living with HIV (TWLWH) in two urban centres in Canada.

*Methods:* Retrospective data were collected from clinic charts of TWLWH aged 16 years and older across seven family medicine, endocrinology, and/or HIV clinics in Montreal and Toronto, Canada from 2018-2019 (n=86). We assessed the proportion of individuals being ever engaged in HIV care (defined as having any recorded antiretroviral therapy [ART] regimen and/or viral load), current ART use, and most recent viral load (suppressed [ $<200$  copies/ml] vs. unsuppressed) overall and compared across subgroups using chi-square tests.

*Results:* All TWLWH in our sample (100.0%, 95% confidence interval [CI]: 95.8-100.0%) were engaged in HIV care; most (93.0%, 95% CI: 85.4-97.4%) were currently using ART and most (93.4%, 95% CI: 85.3-97.8%) with complete data (n=71/76) were virally suppressed. A higher proportion of trans women of colour (100.0%) reported current ART use, compared to white trans women (76.9%,  $p=0.017$ ). A higher proportion of those with no documented history of injection drug use (IDU) (96.6%) were virally suppressed, compared to those with a history of IDU (66.7%,  $p=0.022$ ). While not statistically significant, 96.2% of those currently reporting feminizing hormone use (FHU) were virally suppressed compared to 85.0% of those not reporting use ( $p=0.202$ ).

*Conclusion:* Once engaged in HIV care, TWLWH in Canada appear to have excellent ART use and viral suppression. Findings can be leveraged to identify target populations to enhance HIV care and to further explore the relationship between gender affirming medical care and HIV care.

**Key words:** HIV care cascade; antiretroviral therapy; viral suppression; transgender women; transfeminine; gender affirmation

## **Introduction**

Globally, transgender (trans) women experience a disproportionate prevalence of HIV [1]. A recent meta-analysis identified an HIV prevalence of 14.11% among trans women across 13 United States (U.S.) studies [1], whereas the U.S. national HIV prevalence is approximately 0.36% [2]. Equally concerning are analyses of U.S. cohort and surveillance datasets which have shown trans women living with HIV (TWLWH) have less access to HIV care across the HIV care cascade compared to cisgender people living with HIV, including lower retention in care [3], initiation of antiretroviral therapy (ART) [4], adherence to ART [5], and viral suppression [6].

The U.S. and Canada have differences regarding healthcare organization and human rights protections for trans people. Canada has a universal publicly-funded healthcare system designed, in theory, to reduce socioeconomic barriers to care [7]. Further, gender identity and expression were added as prohibited grounds of discrimination to the Canadian Human Rights Act in 2017 and various provincial and territorial protections previously existed; in contrast, the Human Rights Campaign has noted that 2021 will officially be the “worst year in recent history for [lesbian, gay, bisexual, trans, and queer] LGBTQ state legislative attacks” within the U.S. [8]. Thus, HIV care and associated factors among LGBTQ people living with HIV may look different across the two countries.

Trans identities are not routinely collected nor reported in national estimates of HIV incidence or prevalence in Canada. The most recent HIV prevalence estimates come from the Trans PULSE Ontario study (2009-2010), which reported an HIV prevalence of 2.9% among trans women. Although this prevalence is lower than global estimates, it is much higher than the 2019 Ontario provincial prevalence of 0.18% [9, 10]. Analyses from a subset of TWLWH (n=50) participating in the first wave of the Canadian HIV Women’s Sexual and Reproductive Health Cohort Study (CHIWOS) (2013-2015) showed gaps in HIV care – particularly with respect to

ART uptake – among a community sample of TWLWH [11]. However, CHIWOS remains the only published study characterizing the HIV care cascade among TWLWH in Canada to-date. Characterizing access to HIV care, including factors associated with access among a clinically engaged group of TWLWH, may help researchers and clinicians understand and enhance optimal HIV health outcomes among trans women within universal healthcare settings. The main objectives of this study were to: 1) characterize HIV care (ever engaged in HIV care, current ART use) and HIV health (viral suppression) among TWLWH in two Canadian urban centres; and 2) explore factors associated with current ART use and viral suppression.

### **Materials and Methods**

Data were collected from clinic charts of 1495 trans women aged  $\geq 16$  years, across seven family medicine, endocrinology, and/or HIV clinics in Montreal and Toronto, Canada between July 2018 and December 2019. These clinics represented the primary clinical care sites for the majority of TWLWH in Montreal and Toronto. These analyses draw on the subsample of 86 TWLWH (5.7% of total sample). Year of HIV diagnosis ranged from 1999 to 2019.

#### *Data Collection*

Standardized data collection forms were developed by the clinician, researcher, and community member research team, piloted at two clinics, and refined. Clinic and linking logs were used to identify and merge patients receiving care at multiple sites. Study data were collected and managed using REDCap (Research Electronic Data Capture), a secure electronic data capture tool [12] hosted at Women's College Hospital, Toronto, Canada where research ethics approval was obtained (#2018-0140-E). Central ethics was obtained from the University of Toronto, Toronto, Canada (#36003).

HIV care indicators were ever engagement in HIV care, current ART use, and most recent viral load. Ever engagement in HIV care was measured as having any recorded ART regimen and/or viral load in the dataset (yes vs. no). Current ART use was defined as having one or more ARTs indicated in the chart, with indication of being “ongoing at this dose” considered current ART use. Most recent viral load was based on the most recently reported/recorded viral load (dichotomized as suppressed vs. unsuppressed). Suppressed viral load was defined as  $< 200$  copies/ml.

Sociodemographic factors utilized in these analyses included age (continuous and categorized as  $< 30$ , 30-39, 40-49, 50-59, and 60+), race/ethnicity (white vs. person of colour),

legal status in Canada (Canadian citizen/permanent resident vs. refugee/refugee claimant, birthplace (Canada vs. Outside of Canada), relationship status (legally married/common law/in a relationship, single/separated/divorced/widowed, and other), employment status (employed vs. unemployed), receiving social assistance (yes vs. no). Mental health, physical health, and substance use factors included: ever being diagnosed with a mental health condition (excluding gender dysphoria), any other current chronic medical diagnoses, and a history of injection drug use (IDU) (each yes vs. no). Healthcare access and utilization factors included: having an endocrinologist, current feminizing hormone use (FHU), and planned or completed gender-affirming surgery (each yes vs. no).

### *Data Analyses*

All variables were summarized as median and interquartile ranges (IQR) for continuous variables and proportions for categorical variables and with 95% confidence intervals (CIs) for the ever engagement in HIV care, current ART use, and most recent viral load. The prevalence of ever engaging in HIV care, current ART use, and most recent viral load were reported overall and compared across subgroups for current ART use and most recent viral load, using chi-square tests.

### **Results**

TWLWH in our sample had a median age of 38 (IQR: 27, 47) (Table 1). Nearly one-half (44.2%, n=38/86) were TWLWH of colour, with 13/86 (15.1%) white, and 40.7% (n=35/86) missing race/ethnicity data. Almost half were born outside of Canada (47.7%, n=41/86), with approximately one-fifth (19.8%, n=17/86) born in Canada and another 32.6% missing birthplace data (n=28/86). Most TWLWH in our sample received social assistance (69.8%, n=60/86). Three-quarters of TWLWH in our sample had ever been diagnosed with a mental health condition (76.7%, n=66/86). Most TWLWH in our sample (68.6%, n=59/86) were currently using FHT, while 38.4% (n=33/86) had planned or completed gender affirming surgery.

All TWLWH in our sample (100%, 95% CI: 95.8-100.0%, n=86/86) were ever engaged in HIV care. Most (93.0%, 95% CI: 85.4-97.4%, n=80/86) were currently using ART. Among those with complete data, most (93.4%, 95% CI: 85.3-97.8%, n=71/76) were virally suppressed at most recent viral load, while 82.6% (95% CI: 72.8-89.9%, n=71/86) were for the entire cohort. The most recent viral loads documented ranged in last recorded date from 2013 to 2018.

Given sample size limitations and missing data, few factors demonstrated a statistically significant association with HIV care (Table 1). Race/ethnicity was significantly associated with current ART use, such that a higher proportion of trans women of colour reported current ART use (100%, n=38/38), compared to white trans women (76.9%, n=10/13), and to those 91.4% (n=32/35) missing race/ethnicity data ( $p=0.017$ ). Among 76 TWLWH in our sample with complete viral load data, a higher proportion of TWLWH in our sample with no documented history of IDU (96.6%, n=28/29) were virally suppressed at most recent viral load compared to those with a history of IDU (66.7%, n=4/6), and 95.1% (n=39/41) of those missing history of IDU data ( $p=0.022$ ). Finally, 100.0% (n=36/36) of those reporting having no planned or completed gender affirming surgery were virally suppressed, compared to 90% (n=27/30) of those reporting planned or completed gender affirming surgery and 80% (n=8/10) of those with missing gender affirming surgery data ( $p=0.049$ ). Although not statistically significant, 96.2% of TWLWH currently reporting FHU were virally suppressed compared to 85.0% of those not reporting current FHU.

## Discussion

Findings suggest that once engaged in HIV care, TWLWH appear to have excellent uptake of ART and viral suppression. Though not directly comparable given differences in operationalization of measures, our estimates appear higher than those identified among people living with HIV in a retrospective population-based cohort study in Ontario, Canada which identified 87% (95% CI: 81-87%) were engaged in HIV care, 81% (95% CI: 70-82%) were currently using ART, and 80% (95% CI: 67-81%) were virally suppressed [13]. Our estimates are also higher than those emerging from the U.S. For example, a recent U.S. study utilizing national administrative data (n=6534 trans women) reported that 79.0% of TWLWH were virally suppressed [3]. Also contrary to data emerging from the U.S. indicating racial disparities between cis and TWLWH [14], a higher proportion of TWLWH of colour were currently using ART compared to white TWLWH in our sample. These findings are consistent with Canada's CHIWOS data, that reported women of African/Caribbean/Black versus white race/ethnicity have lower odds of having a gap in comprehensive care [15], and lower odds of being lost at retention, ART initiation, and viral suppression [16]. Authors of these studies note the high proportion of CHIWOS participants of colour who have immigrated, for whom a move to Canada may increase access to HIV care within a universal healthcare system. These findings

point to the importance of understanding local contexts and histories associated with diaspora communities when examining the HIV care cascade and potential interventions.

Our findings corroborate other research suggesting that IDU is a barrier to HIV care within systems that stigmatize people who use substances. This information should be more routinely collected in affirming ways, taking into consideration best practices (e.g., self-administered questionnaires) and be informed by intersectional considerations such as concerns about confidentiality and disclosure, particularly among trans women with precarious immigration status [17]. Gender-affirming support for substance use is also urgently needed. One promising intervention is Seeking Safety, an evidence-based intervention that combines substance use and PTSD treatment, adapted for use with TWLWH [18]. Mental health disparities and unmet mental health needs among trans women are also well-documented [19]. As over three-quarters of TWLWH in our study were diagnosed with a mental health condition (excluding gender dysphoria), gender-affirming mental health support is also urgently needed.

Although not all trans women access gender-affirming medical care, professional organizations recognize that access is medically necessary to support the health and well-being of those who desire it, with manifold positive psychosocial effects [20]. Our data found a high use of FHU, but low uptake of gender affirming surgery. These findings corroborate a previous study suggesting TWLWH may experience unique barriers to gender-affirming surgery (e.g., HIV stigma, financial barriers, social isolation) [21]. The non-significant yet interesting finding that a higher proportion of those reporting current FHU were virally suppressed than those not reporting FHU is consistent with research suggesting access to gender-affirming medical care may facilitate uptake of HIV care [11]. This finding appears in conflict with our finding that TWLWH who had not undertaken gender affirming surgery had better HIV outcomes, which may be related to our small sample size and repeated comparisons. However, our prior research showed that viral suppression was either a stated or perceived pre-requisite for gender-affirming surgery for TWLWH [21], as often is sustained use of FHT. Thus, it is possible that either TWLWH who have not undergone gender-affirming surgery may be motivated to maintain HIV health to acquire surgery, or that TWLWH have not undergone gender-affirming surgery because of a detectable viral load. More research is needed to further examine these associations and to continue to develop integrated HIV and gender-affirming care models for TWLWH.

Our study was limited in ways that led to necessary assumptions and the serious limitations of our outcome measures must be understood to properly contextualize our results. Both current ART use and most recent viral load were based on what was most recently documented in the patient's chart. While we documented whether the recorded ART was ongoing in the chart, it is still possible that some patients may have discontinued ART use. It is also possible that viral load of patients may have changed since their most recently recorded viral load. Future studies with larger sample sizes should take into consideration physician guidelines that recommend assessing viral load every three to six months [22]. Missing values may reduce our confidence on the validity of the comparisons across subgroups of covariates. We created a missing category for the covariates with missing values to maintain the statistical power of the comparisons. Lastly, given the lack of research about TWLWH in Canada, we have no data to assess how representative our sample of TWLWH in Montreal and Toronto are to TWLWH in other urban centres. It is possible that TWLWH in other urban centres may have different levels of engagement with HIV care. We are also further limited in our assessment of generalizability by the lack of routine and comprehensive collection gender identity in national HIV surveillance data nor cohort studies. Systematic data collection of gender identity including within trans identities (e.g. trans women, trans men, nonbinary persons) would better inform clinical care of TWLWH and directions for future research.

### **Conclusion**

Despite these limitations, these preliminary findings can be leveraged to support TWLWH by identifying target populations (e.g., TWLWH with a history of IDU) and developing specific strategies (e.g., increasing access to gender-affirming medical care, particularly FHU) to increase engagement in HIV care. Moreover, these findings suggest the importance of future research with TWLWH in universal care settings, particularly those that consider the multi-faceted determinants of health affecting TWLWH, including gender affirmation.



### **Conflict of Interest Statement**

The authors have no conflicts of interest to declare.

### **Author Contributions**

ALD, YP, AU, NM, PC, and ML conceptualized the study. PC, RF, LYLC, GA, AB, and QN led the study at participating sites. MW, MG, LTK, and AAB collected data at participating sites. MS led data analyses. ALD and MS led the first draft of the manuscript. All co-authors reviewed the manuscript, provided written feedback, and approved the final version.

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**Table 1.** Bivariate analyses of factors hypothesized to be associated with HIV care among trans women living with HIV in clinical care

	Total Sample (n=86) n/N (%)	Current ART use (Yes) (n=86) n/N (%)	Pv	Most Recent Viral Load (Suppressed) (n=76) n/N (%)	Pv
Age			0.818		0.789
< 30	17 (19.8)	15/17 (88.2)		14/15 (93.3)	
30-39	20 (23.3)	19/20 (95.0)		15/17 (88.2)	
40-49	22 (25.6)	21/22 (95.5)		19/20 (95.0)	
50+	27 (31.4)	25/27 (92.6)		23/24 (95.8)	
Race/ethnicity <sup>a</sup>			0.017		0.642
White	13 (15.1)	10/13 (76.9)		9/10 (90.0)	
Non-white	38 (44.2)	38/38 (100)		33/36 (91.7)	
Missing	35 (40.7)	32/35 (91.4)		29/30 (96.7)	
Legal status in Canada			0.690		0.142
Canadian citizen OR permanent resident	31 (36.1)	28/31 (90.3)		26/28 (92.9)	
Refugee OR refugee claimant	12 (14.0)	11/12 (91.7)		8/10 (80.0)	
Missing	43 (50.0)	41/43 (95.3)		37/38 (97.4)	
Birthplace			0.117		0.430
Canada	17 (19.8)	14/17 (82.4)		12/14 (85.7)	
Other	41 (47.7)	40/41 (97.6)		36/38 (94.7)	

Missing	28 (32.6)	26/28 (92.9)	23/24 (95.8)	
Relationship Status				0.963
Legally married/common law/in a relationship	22 (25.6)	20/22 (90.9)	19/20 (95)	
Single/separated/divorced/ widowed	49 (57.0)	46/49 (93.9)	41/45 (91.1)	
Other	1 (1.2)	1/1 (100)	1/1 (100)	
Missing	14 (16.3)	13/14 (92.9)	10/10 (100)	
Employment status				0.174
Employed	30 (34.9)	30/30 (100)	27/28 (96.4)	
Not employed	39 (45.4)	35/39 (89.7)	30/34 (88.2)	
Missing	17 (19.8)	15/17 (88.2)	14/14 (100)	
Receiving social assistance				0.715
Yes, any	60 (69.8)	55/60 (91.7)	49/52 (94.2)	
No, none	4 (4.7)	4/4 (100.0)	4/4 (100.0)	
Missing	22 (25.6)	21/22 (95.5)	18/20 (90.0)	
Ever diagnosed with a mental health condition				0.350
Yes	66 (76.7)	62/66 (93.9)	57/60 (95)	
No	16 (18.6)	15/16 (93.8)	12/14 (85.7)	
Missing	4 (4.7)	3/4 (75)	2/2 (100)	
Other current medical diagnoses (chronic condition)				0.175
				0.291

Yes	57 (66.3)	54/57 (94.7)	47/52 (90.4)	
No	26 (30.2)	24/26 (92.3)	22/22 (100.0)	
Missing	3 (3.5)	2/3 (66.7)	2/2 (100.0)	
History of injection drug use				0.731
Yes	7 (8.1)	6/7 (85.7)	4/6 (66.7)	
No	32 (37.2)	30/32 (93.8)	28/29 (96.6)	
Missing	47 (54.7)	44/47 (93.6)	39/41 (95.1)	
Having an endocrinologist				0.552
Yes	25 (29.1)	24/25 (96)	22/22 (100)	
No	22 (25.6)	21/22 (95.5)	19/21 (90.5)	
Missing	39 (45.4)	35/39 (89.7)	30/33 (90.9)	
Current feminizing hormone use				0.032
Yes	59 (68.6)	56/59 (94.9)	51/53 (96.2)	
No	21 (24.4)	20/21 (95.2)	17/20 (85.5)	
Missing	6 (7.0)	4/6 (66.7)	3/3 (100.0)	
Planned or completed gender affirming surgery				0.281
Yes	33 (38.4)	32/33 (97)	27/30 (90.0)	
No	41 (47.7)	38/41 (92.7)	36/36 (100.0)	
Missing	12 (14.0)	10/12 (83.3)	8/10 (80.0)	

<sup>a</sup> Further race/ethnicity breakdown is: White (n=13/86, 15.1%), Black (n=15/86, 17.4%), Indigenous (n=2/86, 2.3%), Asian (n=2/86, 2.3%), South Asian (n=4/86, 4.7%), Latina/x (n=8/86, 9.3%), Other (n=7/86, 8.2%), Missing (n=35/86, 40.7%).