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Engagement in HIV Care among New York City Transgender Women of Color: Findings from the Peer-Led, TWEET Intervention, a SPNS Trans Women of Color Initiative

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Abstract

Transgender women (TW) have higher HIV prevalence rates than cisgender (i.e., non-transgender) women. However, utilization of healthcare for transgender people in the U.S. is low. As part of a multisite initiative to facilitate entry and retention in HIV care for TW of color, we compared health outcomes between participants who became Peer Leaders and those who did not. From 2013–2016, 163 New York City, mostly Latina, TW enrolled in the Transgender Women Engagement and Entry to Care Project (TWEET). The TWEET intervention included peer-led, group-based educational sessions called Transgender Leader (TL) – Teach Back; 39% completed Peer Leadership requirements. Comparing pre-post change by Peer Leader status, Peer Leaders had a significant decrease in viral load and significant increase in CD4 at the last HIV care visit compared to the first. In multivariable logistic regression, predictors associated with Peer Leadership included having at least some college education, being in a relationship, stable housing, receiving legal assistance for political asylum, and having two or more HIV care visits during the intervention. Findings suggest that, for trans women who have completed at least secondary school education, participating in a peer-led intervention can lead to improved HIV care engagement. Understanding which program components lead to becoming a Peer Leader, and how to better engage non-Peer Leaders, are important next steps.

Keywords

Transgender; Peer Leader; Intervention; Political Asylum; HIV

INTRODUCTION

Transgender women (TW) have higher HIV prevalence rates than cisgender (i.e., non-transgender) women [1, 2], and African American and Latina TW have even higher HIV prevalence rates than TW of other races and ethnicities [3–5]. A systematic international review reported an HIV prevalence rate of 19.1% among TW [6]. In US-based studies, HIV prevalence among TW ranged from 16% to 63% with higher prevalence rates for African American and Latina TW [4, 7–10]. Additionally, it is estimated that 84% of all HIV cases among transgender persons are among TW, making them the most heavily impacted demographic group in the US [11]. Despite these statistics, access to, and utilization of, culturally sensitive, quality medical care for transgender people in the U.S. is low [12, 13]. According to a 2015 survey of over 27,000 transgender people in the U.S., almost one-quarter reported that, at some point in the past year, they needed health care but did not seek it due to fear of discrimination for being transgender [14].

Research findings suggest that substance use, unstable housing and the need for gender affirmation are three critical priorities for TW that often compete with engagement in medical care [15, 16]. These barriers to engagement contribute to lower rates of viral load suppression among TW compared to HIV-positive cisgender women [16, 17]. In the U.S., partial engagement in HIV care, as opposed to full retention, is common and those who are partially engaged comprise the majority of individuals with a detectable HIV viral load [18]. Hence, research has called for “strengths-based” case management as a best practice for linking and engaging TW into care, with several studies confirming its success over passive referrals to care [19–21].

Peer-led interventions exemplify a strengths-based approach that involves individuals from a specific community providing other community members with education, navigation, and support. Research has demonstrated efficacy of peer-led interventions in reducing structural barriers to care and improving health outcomes for people living with HIV [22, 23]. Nevertheless, findings based on self-reported outcomes may be influenced by participant bias and have led to a call for more studies of peer-led interventions using biomarkers such as viral load level as the primary outcome indicator [22–24]. A special project of national significance (SPNS) initiative that includes behavioral interventions, intensive case management, patient navigation, life skills training, literacy training, and home-based outreach is one example of a case management intervention that has demonstrated an improvement in rates of partial engagement in HIV care [18].

Few programs exist specifically for transgender persons, and even fewer studies have assessed the process of becoming a Peer Leader and its impact on their own health. Two non-transgender Peer Leader study examples from the literature include a qualitative study of experiences of HIV Peer Leaders in an HIV medical setting that described experiences related to being a Peer Leader but not how the process of becoming a peer leader impacted

their own health [25]. Another study of nominated Peer Leaders from the injection drug use community found self-reported reduced HIV transmission risk behaviors among Peer Leaders and their drug networks compared to a non-Peer Leader group control [26]. However, to our knowledge, there are no studies that have assessed HIV-associated health outcomes among trans women who become Peer Leaders.

The current report is part of a multisite SPNS initiative to facilitate entry and retention in care of TW of color living with HIV. This New York City site developed the Transgender Women Engagement and Entry to Care Project (TWEET), a peer-led educational intervention, where peers conducted group-based educational sessions, Transgender Leader (TL) – Teach Back, designed to increase engagement in HIV care. All participants were provided access to HIV primary care services, case management, and health and legal services. In the current project, we describe the development and implementation of TWEET and TL – Teach Back group educational sessions, and we conduct within- and between-Peer Leader analyses to assess whether becoming a Peer Leader is associated with increased engagement in HIV primary care and other health services among TW of color living with HIV.

METHODS

The Institutional Review Boards at Community Healthcare Network (CHN) and Public Health Solutions in New York, NY approved all procedures.

Participants

From December 2013 to August 2016, 163 TW were enrolled in TWEET. In order to be considered eligible to participate in the SPNS initiative, individuals presenting at CHN had to report and confirm, via viral load test, an HIV-positive serostatus, identify as a TW of color, and be at least 18 years of age. Participants were not required to receive HIV care from CHN to participate in the intervention.

Intervention Overview

Design.—In 2012, prior to implementation of the TWEET intervention, CHN conducted a community needs assessment to identify service and education gaps in the Queens, NY transgender community. The needs assessment clearly identified that very few or no clinical, health, or legal services were available and that access to, and retention in, culturally competent HIV care was essential. As a result of the needs assessment, several community leaders were identified, as well as culturally and clinically competent potential staff members. After establishing an intervention team, staff helped to develop a theoretically informed curriculum for the TL – Teach Back group educational sessions. The resulting TWEET intervention is a peer-based model of outreach and engagement designed to increase access to and retention in quality HIV primary care for New York City TW of color who are newly diagnosed or lost to care. The transgender community often perceives [27, 28] or experiences [29] stigma and discrimination when attempting to access health care services [30], which can greatly impact the patient-provider relationship [31]. TWEET and the TL – Teach Back group-based educational sessions were developed within the

framework of an existing HIV primary care model, where participants receive HIV-related medical services at a minimum of once every three months (and referral for ancillary services as needed).

Theoretical Framework and Intervention Components.—TWEET and the TL – Teach Back group-based educational sessions are grounded in social learning and social cognitive theories [32, 33]. The intervention was designed to engage potential Peer Leaders through relevant health-related topics. Risk reduction and health behavior change were demonstrated through observation of modeling behaviors, participant interaction, and group discussion. Group sessions were facilitated by a Peer Leader. TL – Teach Back education topics were conceptualized to lead to increased engagement in HIV care. Intervention staff developed the educational content for the groups sessions based on HIV prevention and transgender health literature as well as CDC guidelines related to the content areas. TL – Teach Back peer-led group educational sessions occurred twice a week on sexual health or HIV prevention topics related to engagement in care. Each week, group sessions covered an educational topic followed by group discussion in one of the following areas: 1) HIV/AIDS and sexually transmitted infections (STIs), 2) Sexual Health, 3) Gender Transitioning, 4) Wellness, and 5) Mental Health. Group sessions lasted up to 120 minutes. The educational portion of sessions lasted approximately 60 minutes, followed by a 30-minute group discussion. Group participants completed a pre- and post-test after each group session. To increase a participant’s involvement, feedback on post-test results was discussed with the group. Importantly, group sessions were scheduled on the same days that the HIV care provider was on site (i.e., co-location of services), which enabled group participants to participate and engage in HIV care.

Process of Becoming a Peer Leader.—Potential participants recruited from outreach events were referred to the weekly TL – Teach Back sessions facilitated by a Peer Leader. Potential participants were encouraged to visit the following week and continue attending TL – Teach Back sessions. Attending a minimum of three sessions was required to become a Peer Leader. Responsibilities of Peer Leaders included meeting with intervention staff for individual coaching/technical assistance while preparing educational group session(s); leading at least one group session within the five topic areas; participating in outreach activities; and referring potential participants to the TWEET intervention. To address the theoretical underpinnings of the group-based educational sessions, Peer Leaders were encouraged to incorporate interactive group methods including audience participation, leading group activities, and role playing and modeling health behaviors during their presentations. After officially becoming a Peer Leader, the project hosted a graduation ceremony, where Peer Leaders received a certificate of completion and a gift card. Of note, participants were referred to onsite primary care services regardless of their Peer Leader status.

Health Services and Referrals.—Supportive services through CHN included assistance with name change or gender marker; referrals for gender confirmation surgeries (linked with knowledgeable and skilled providers); referral to trans-sensitive shelters or housing specialists; referral or peer support for legal problems, which included accompanying clients

to court or to see a lawyer; and assistance with applying for political asylum (especially with participants who were newly diagnosed with HIV and who could apply for a “change of circumstance”) based on being transgender. These services were considered part of usual care. However, extensive advocacy and legal service provision for political asylum were developed during the SPNS project due to participants’ need for such services.

Procedures

Recruitment.—Recruitment activities focused on community events such as celebration of Trans Pride, Trans Day of Remembrance, Miss Trans Latina, and specific holidays (e.g., Thanksgiving). Peers were encouraged to recruit TW from their networks and assist staff with outreach at events. Participants who attended weekly educational group sessions were invited to take part in event planning and recruiting potential participants.

Survey Data Collection.—As part of the SPNS demonstration project, participants completed a comprehensive, self-administered assessment on a computer tablet or desktop every six months up to 36 months (i.e., 6 interview waves). Surveys were administered electronically using the Research Data Capture (REDCap) system [34], took approximately 90 minutes to complete, and were available in English and Spanish. Questions included demographics, gender identity, substance use, sexual behaviors, health and healthcare experiences, intervention exposure encounters and outcomes, and services needed. Additionally, every six months, staff completed and submitted a document that provided data extracted from participant medical charts. Each wave tracked medical data and intervention. The New York site data were then uploaded to the project’s technical coordinating center’s REDCap website where it was aggregated with data from other participating sites. The first wave of data collection began in February 2014 from which the baseline sample (n=163) was defined.

Measures

Demographics.—Age was determined based on birthdate and survey completion date. For ease of analysis, age was grouped into categories (18–29, 30–39, 40–49, 50+). Education level was collected with the question, “What is the highest level of education you have completed so far?” Response categories included less than or equal to grade 8; Grades 9 through 11; Grade 12 or GED; Some college, Associate’s degree, or Technical degree; Bachelor’s degree; Any graduate studies (e.g., MD, PhD, MA, MS).

Regarding ethnicity, participants were asked, “Are you Hispanic, Latino/a, or of Spanish origin?” Response options included No, not of Hispanic, Latino/a, or Spanish origin; Yes, Mexican, Mexican American, Chicano/a; Yes, Puerto Rican; Yes, Cuban; or Yes, another Hispanic, Latino, or Spanish origin. Participants were asked what race they considered as their primary identity, with the response options White, Black or African American, Latina or Hispanic, American Indian or Alaska Native, Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Other Asian, Native Hawaiian, Guamanian or Chamorro, Samoan, or Other Pacific Islander. In addition, participants were asked what country they were born in and could select from a list of continents, with a secondary question inquiring about specific

country. Finally, in response to “What is your relationship status?” participants could select Single; In a relationship-living together; In a relationship- not living together; or Other.

Health Characteristics.—Participants were asked about their sources of medical insurance during the past six months, with response options including Private, Medicare, Medicaid, Other public insurance, No insurance, Ryan White, ADAP, and Other. No differences were seen across health insurances types by Peer Leader status and were collapsed into a dichotomous variable. Unstable housing was assessed with, “In the past 6 months, how often have you been homeless or temporarily or unstably housed? This can include staying with others, even for one night if you had no other place to stay.” A 5-point Likert scale ranged from Never to Always; a large proportion of participants responded with Don’t Know or Decline to Answer and were treated as an additional response category. A dichotomous (yes/no) question inquired about transactional sex, “In the past 6 months, have you exchanged sex for money, drugs, or other things that you need?” An adapted food insecurity item [35], using a 5-point Likert scale (Never to Always) asked, “In the past 6 months, how often were you hungry but didn’t eat because you couldn’t afford enough food?” Finally, years since HIV diagnosis was calculated from the self-reported diagnosis year.

Access to Services and HIV Clinical Care.—Process data for services accessed such as political asylum, obtaining a visa, legal name change, and the human trafficking diversion program were collected for the types of on-site services that were available for participants. Process data were collected on the number of HIV care visits attended, viral load and CD4 tests conducted (and their results), and referral for mental health services. Extracted electronic medical record data for HIV care services included dates for the first and last HIV clinic visits, viral load testing (quantitative and qualitative [detectable vs. undetectable]), monitoring antiretroviral therapy (ART) adherence approximately every 3 months, and CD4 count that was collected every 3–6 months depending on level of CD4 and viral suppression. [36] The number of medical visits was positively skewed so they were dichotomized based on the distribution. For viral load data extracted from electronic medical records described as “<20” copies per ml, we recoded data to “19”. Quantitative CD4 count was reported in the electronic medical record; for Table 2, it was categorized as 0–199, 200–349, 350–499, and 500+. Although more sensitive assays that could detect less than 20 copies per ml were used, undetectable was defined as a viral load less than 200 copies per ml since some individuals may experience small spikes in viral load [37]. The SPNS intervention exposure definition for this project included the approximate number of minutes accrued for participating in TL – Teach Back group educational sessions, healthcare visits, and engaging in individualized care planning with case managers.

Analyses

To address the research question of whether becoming a Peer Leader was associated with increased engagement in HIV primary care and other health services, data analyses were conducted with IBM SPSS version 23 [38] for the overall sample (n = 163) using baseline survey data, process data from health services accessed, and extracted medical record data. We conducted preliminary bivariate analyses to screen for candidate variables for the

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multivariable model, comparing factors associated with becoming a Peer Leader. Only bivariate associations with becoming a Peer Leader that were significant at $p < 0.10$ were included in the multivariable logistic regression model. During the course of the intervention, the number of group sessions attended by participants ranged from 0 to 17 (mean = 3, SD = 3.2; median = 2). However, becoming a Peer Leader was contingent upon attending at least three sessions, and becoming a Peer Leader and number of group sessions were highly correlated ($r = 0.73$, $p < 0.001$), thus group sessions data were not included in analyses. In addition, TW who received HIV care elsewhere were significantly less likely to become a Peer Leader than TW receiving on-site services (0.28, 95% CI (0.11 – 0.76); however, since receiving HIV care elsewhere was correlated with number of medical visits ($r = 0.50$, $p < 0.001$) it was excluded from the multivariable logistic regression model. Finally, because viral load data were highly skewed (first clinic visit skewness = 6.04; last clinic visit skewness = 6.43), though not CD4 (first clinic visit skewness = 0.28; last clinic visit skewness = 0.58), we conducted nonparametric Wilcoxon signed-rank tests for both viral load and CD4 data, comparing first and last clinic visit test outcomes for the overall sample and between participants who did and did not become Peer Leaders.

Survey data were complete for 163 participants, though a substantial subset of the sample ($n = 59$) was missing electronic medical record data for viral load and CD4 data for the following reasons: 27 received HIV care outside of CHN during the intervention and we did not have access to their HIV clinical records; 20 were lost to follow-up; and 12 were missing either the first or last HIV care visit. Missing cases were associated with older age (Ref: 18–29; age 50+ OR 4.93, 95% CI 1.63 – 14.94), not becoming a Peer Leader (OR 0.13, 95% CI 0.05 – 0.31), not seeking political asylum (OR 0.33, 95% CI 0.17 – 0.65) or not receiving mental health services (OR 0.09, 95% CI 0.04 – 0.22). To address missing clinical data, we conducted sensitivity analyses to estimate within-person changes for viral load from the first clinic visit to the last. McNemar's test was used to compare the paired dichotomous clinic data.

RESULTS

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Approximately 39% of participants became Peer Leaders through the TWEET intervention. Age of participants ranged from 19 to 61 years (mean: 37.5, SD = 10.15) and 93% self-identified as Hispanic or Latina (Table 1). Most (80%) reported a high school diploma or less, and 86% were born outside of the U.S.; specifically, the greatest proportion of participants were born in Mexico (36%), followed by Central (20%) and South America (19%), the U.S. (12%), the Caribbean (7%), or other countries (6%). Almost all participants (93%) reported some type of health insurance: most reported having AIDS Drug Assistance Program insurance (ADAP; 46%), followed by Medicaid or Medicare (40%), no insurance (8%), private insurance (5%), or other public health insurance (1%). In the past 6 months, nearly equal proportions reported yes (42%) or no (43%) regarding being homeless or having unstable housing. Exchanging sex for money, drugs, food or shelter in the past 6 months was reported by 44% of participants. Approximately 25% of participants had a new (past year) HIV diagnosis. In Table 1, the only demographic differences found by Peer Leader status were educational attainment and relationship status, with Peer Leaders having a significantly higher likelihood of reporting at least some college education and being in a

relationship. Regarding health characteristics, compared to those who did not know or declined to answer, Peer Leaders were significantly less likely to report housing instability in the past 6 months (OR 0.23, 95% CI 0.08 – 0.62).

Among all participants, including those with missing HIV clinical data, 59% of TW had an undetectable viral load at the first clinic visit; no differences were seen by Peer Leader status (yes, 54% vs. no, 46%). For the overall sample with HIV clinical data, there was a significant decrease in viral load at the last HIV care visit compared to the first visit ($n = 104$; Time 1 median = 19; IQR = 19 to 285; Time 2 median = 19; IQR = 19 to 19; $Z = -2.09$, $p < .05$). A significant increase in CD4 count was evident by the last HIV care visit compared to the first ($n = 84$; Time 1 median = 527.50; IQR = 343.75 to 750.00; Time 2 median = 572.50; IQR = 377.75 to 847.75; $Z = -3.59$, $p < 0.001$). By Peer Leader status (Table 2), HIV clinical data revealed that a significantly greater proportion of Peer Leaders had an undetectable viral load at their last HIV care visit compared to their first visit. Similarly, Peer Leaders had a significant increase in CD4 at their last HIV care visit compared to their first. No significant changes were detected for non-Peer Leaders. Of note, over the course of the 5-year intervention, only 28 participants (17%) were lost to HIV care, yielding an 83% retention rate in HIV clinical care at the final visit.

Comparing participants who did and did not provide viral load data, either due to receiving care externally or because of loss to follow-up, we assessed the potential impact of missing data by conducting sensitivity analyses. We assessed viral load at the final HIV care visit and made two different assumptions about viral load status among those with missing data. First, we assumed that all TW participants with missing data reported a detectable viral load at the final HIV care visit and found that Peer Leaders would be significantly less likely to have a detectable viral load than non-Peer Leaders (26% vs. 74%, OR 0.29, 95% CI 0.15 – 0.57). Second, we assumed that all TW participants with missing data reported an undetectable viral load at the final HIV care visit and found no difference in viral load status between Peer Leaders and non-Peer Leaders (52% vs. 48%, OR 1.76, 95% CI 0.76 – 4.08).

TWEET participants accessed a number of services during the intervention (Table 3): 79% had a legal name change, about half sought asylum, 55% attended 2 or more medical visits, 49% received a referral for mental health services, 12% who had been arrested for sex work in the New York Human Trafficking Court were referred to CHN's Diversion Program (which mandated TL – Teach Back group educational sessions but participants did not have to become a Peer Leader), and 10% applied for visas. Regarding intervention exposure, the median time retained in the intervention was 18 months, with 35% remaining in the project for 12 months, 24% remaining for 18 months, 20% remaining for 24 months, and 21% remaining 30 to 42 months. The median intervention dose was 335 minutes (range: 0–5,392). Further, Peer Leaders accessed significantly more services (Median = 2) than non-Peer Leaders (Median = 1) ($Z = -3.805$, $p < 0.001$), including seeking political asylum, number of HIV care medical visits, and referral for mental health counseling.

The multivariable logistic regression model (Table 4) showed that having some college education or more (OR 3.59, 95% CI 1.08 – 11.96), being in a relationship (OR 3.57, 95% CI 1.07 – 11.89), receiving legal assistance for political asylum (OR 6.05, 95% CI 2.32 –

15.78), and having two or more HIV care visits during the intervention (OR 4.02, 95% CI 1.45 – 11.18) were associated with becoming a Peer Leader. In addition, participants who became a Peer Leader were significantly less likely than non-Peer Leaders to report being homeless or having unstable housing in the past 6 months (OR 0.14, 95% CI 0.03 – 0.55). Referral for mental health problems, although significant in the bivariate analysis, lost significance in the multivariable model.

DISCUSSION

In this intervention with mostly Latina-identified TW, we assessed whether becoming a Peer Leader was associated with increased engagement in HIV primary care and other health services among New York City TW of color living with HIV. There is mixed evidence that peer-based interventions are successful at improving health outcomes [39]; however, the TWEET intervention demonstrated that becoming a Peer Leader was associated with improved viral load and CD4. Nemoto et al. [40] conducted a similar peer-led program that resulted in reduced risk behaviors, though the program only assessed individuals who participated in educational workshops and did not have a comparison group.

Findings indicate that trans women with greater educational and social assets were more likely to benefit from the TWEET intervention. Indeed, participants who became Peer Leaders had significantly higher education and were more likely to be in a relationship, compared to participants who did not become Peer Leaders. It is possible that participants with higher education were more comfortable developing and running educational group sessions than those with less education. Peer Leaders were also more likely to have stable housing and be in a relationship than participants who did not become Peer Leaders, suggesting a higher level of social support prior to enrolling in the program. It is likely that having housing stability prior to and during the intervention enabled participants to become more involved in the intervention, especially in terms of becoming a Peer Leader. Thus, the challenge for interventionists is to improve the TWEET model to better engage those with fewer assets. Nevertheless, the co-location of HIV care services and TL – Teach Back group educational sessions may help to explain the relatively high engagement in HIV care across Peer Leader status; co-location of HIV care and ancillary services has been recommended for improving retention in HIV care [41].

Applying for political asylum was one of the most sought-after services among TW participating in the project. HIV care physicians trained in transgender care at CHN assisted clients with asylum by providing letters affirming that the participant started hormone therapy and/or surgical procedures and sending the participant back to their country would be detrimental to their health. The finding that Peer Leaders were more likely to be granted political asylum than participants who did not become a Peer Leader may be a social/structural phenomenon, whereby becoming more active in the community was critical for participants seeking asylum. Participants in the process of seeking political asylum were encouraged to attend TL – Teach Back sessions; however, becoming a Peer Leader was not mandatory for asylum purposes. The metaphor of leading a horse to water may help to explain the high level of engagement on the part of participants who became Peer Leaders,

perhaps due to the participatory approach of TWEET and the magnitude of the association between Peer Leadership and seeking political asylum [42].

The finding that 59% of TW participants had an undetectable viral load near the beginning of the intervention is somewhat similar to 2012–2016 data from New York City Department of Health data for transgender persons (rates of viral suppression 57%–75%) [43, 44]. A 2016 surveillance report from the New York City Department of Health and Mental Hygiene found a 70% viral suppression rate among 1,100 transgender people living with HIV, which is higher than what was found in the current intervention [43]. It is clear that the rate of viral suppression among transgender women in New York City is relatively high compared to other U.S. cities, though there is much work to be done to reach and maintain the UNAIDS 90-90-90 goals [45]. However, findings from this intervention suggest that the sample is likely biased towards a healthier population and not reflective of the overall TW population, as suggested by the higher rates of unsuppressed viral load reported in the literature. Participants who became a Peer Leader in the TWEET intervention significantly reduced HIV-related morbidity at the end of the intervention compared to the beginning, while those who did not become a Peer Leader did not have statistically significant reductions in HIV-related morbidity. Specifically, electronic medical record data revealed that a greater proportion of participants had significantly lower viral load at their last clinical visit compared to their first, and their CD4 count improved significantly at their last clinical visit compared to their first. Those who became Peer Leaders were also more likely to have greater engagement in HIV care, reporting two or more visits during the intervention, in comparison to those who did not become Peer Leaders. It is possible that TW who did not become Peer Leaders had poorer health at the start of the intervention due to past negative healthcare experiences, perceived stigma, or concerns about deportation may have avoided participating [46]. For TW who received care elsewhere and for those who dropped out of HIV clinical care, there is a need to better understand how to engage TW who are more resistant to care.

Limitations

Findings from this intervention may only be generalized to TW of color living with HIV who reside in the New York City area and who are in need of HIV care and other health services. A limitation in this analysis is that we did not have viral load data for 59/163 (36%) of the sample; many TW in this project were already receiving HIV care when they entered into the intervention, and some TW were lost to follow-up, thus we were unable to obtain viral load and CD4 data from a substantial subset of participants. It is possible that TW who missed clinical appointments were in worse health and thus more inclined to drop out of clinical activities. Sensitivity analyses for viral load data indicated that if TW missing clinical data reported a detectable viral load, Peer Leaders would still report a lower proportion of detectable viremia relative to non-Peer Leaders. While our analytic approach is strengthened by temporal ordering, because of the single-arm design, we cannot rule out the possibility that differences in biomedical outcomes of Peer Leaders pre- and post-intervention were due to factors other than the intervention.

Another limitation of the project is that we did not collect process evaluation data about participants' experiences with TWEET, overall, or the TL – Teach Back group educational sessions (e.g., what they liked or disliked, what motivated them to attend group sessions, whether developing and running their own group sessions increased their confidence and ability to help others, whether they gained a sense of community). We also did not assess participants' reasons for engaging (or not engaging) in the TL – Teach Back sessions or why participants wanted to become a Peer Leader. It appears that an initial motivation was seeking political asylum; however, there may be more granular reasons such as giving back to the community or becoming a part of the local community. Finally, we do not know whether improved HIV care outcomes among Peer Leaders are due to selection bias, acquiring a Peer Leadership role or a combination therein. The TWEET intervention differs from other Peer Leader initiatives in that becoming a Peer Leader was part of the intervention itself, as opposed to implementing a program with established Peer Leaders who conduct the intervention work [40, 47]. In that way, the intervention provided more of an opportunity to develop leadership skills, which might amplify the potential for benefit among Peer Leaders [48]. Future research should explore this phenomenon.

CONCLUSIONS

Findings from this intervention demonstrate that becoming a Peer Leader in this trans-specific and trans-inclusive intervention was associated with improved engagement in HIV care and HIV-related outcomes including decreased viral load and increased CD4 count. The Peer Leader model exemplified leadership from the community, created a safe space for TW, and increased access to needed care and services, which likely contributed to improved health outcomes. However, prior to replicating a program such as this, it is critical to determine which component(s) lead to successful health outcomes to improve health of TW living with HIV, regardless of Peer Leader status.

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Table 1

Characteristics associated with Peer Leadership among New York City transgender women of color living with HIV, N = 163

Characteristic	Overall N (%)	Peer Leader (N=63)	Not a Peer Leader (N=100)	Chi-square p-value
Age	N=163			
18–29	42 (26)	18 (29)	24 (24)	
30–39	58 (36)	21 (33)	37 (37)	
40–49	41 (25)	16 (25)	25 (25)	
50+	22 (13)	8 (13)	14 (14)	0.917
Hispanic Ethnicity	N=155			
Yes	145 (93)	56 (95)	89 (93)	
No	10 (7)	3 (5)	7 (7)	0.587
Education	N=147			
Up to 12 th grade or GED	118 (80)	41 (72)	77 (86)	
Some college or more	29 (20)	16 (28)	13 (14)	0.043
US born	N=157			
Yes	22 (14)	7 (12)	15 (16)	
No	135 (86)	54 (88)	81 (84)	0.465
Relationship status	N=158			
Single	130 (82)	43 (72)	87 (89)	
In relationship	28 (18)	17 (28)	11 (11)	0.006
Any health insurance	N=149			
Yes	138 (93)	52 (93)	86 (93)	
No	11 (7)	4 (7)	7 (7)	0.931
Past 6 months, homeless or unstable housing	N=157			
Yes	66 (42)	15 (25)	51 (53)	
No	68 (43)	33 (54)	35 (37)	0.002
Don't know/refused	23 (15)	13 (21)	10 (10)	
Past 6 months, not enough money to buy food	N=144			
Yes	101 (70)	37 (67)	64 (72)	
No	43 (30)	18 (33)	25 (28)	0.555
Past 6 months, exchanged sex for money, drugs, food, shelter, etc.	N=134			
Yes	59 (44)	19 (38)	40 (48)	
No	75 (56)	31 (62)	44 (52)	0.278
Years since HIV diagnosis	N=137			
Past year	34 (25)	14 (23)	20 (26)	
More than a year	103 (75)	46 (77)	57 (74)	0.723

Some variables have missing data. One participant is deceased.

Table 2

Within-group pre- and post-test differences^a in viral load and CD4 by peer leader status

	Time 1 ^b [median]	IQR ^c	Time 2 ^b [median]	IQR ^c	Z-score	P-value ^f
Peer Leader						
Viral Load ^{d,e} , n=56	19	19 – 19	19	19 – 201.75	-2.03	0.042
CD4 ^d , n=48	532.50	344.50 – 700.50	627.50	423.75 – 777.25	-3.47	0.001
Non-Peer Leader						
Viral Load ^{d,e} , n=48	19	19 – 53	19	19 – 527.50	-1.19	0.231
CD4 ^d , n=34	521	323.25 – 873.50	487	312 – 943.75	-1.48	0.139

^aWilcoxon signed-rank tests for repeated measurements.

^bTime 1 and Time 2 refer to participants' first and final clinical visits during the study.

^cIQR = interquartile range; 25th to 75th percentiles.

^dViral load and CD4 data were retrieved from electronic medical records.

^eUndetectable viral load was coded as 19 copies/mL.

^fBolded values indicate $p < 0.05$.

Table 3

Types of Service Use and Care associated with Peer Leadership among New York City transgender women of color living with HIV, N = 163

Characteristic	Overall N (%)	Peer Leader (N=63)	Not a Peer Leader (N=100)	Chi-square p-value
Asylum services	N=163			
Yes	84 (52)	49 (78)	35 (35)	
No	79 (48)	14 (22)	65 (65)	<0.001
Visa services	N=163			
Yes	17 (10)	4 (6)	13 (13)	
No	146 (90)	59 (94)	87 (87)	0.176
Legal name change	N=163			
Yes	129 (79)	54 (86)	75 (75)	
No	34 (21)	9 (14)	25 (25)	0.101
Human trafficking	N=163			
Yes	20 (12)	9 (14)	11 (11)	
No	143 (88)	54 (86)	89 (89)	0.534
Mental health referral	N=163			
Yes	80 (49)	40 (64)	40 (40)	
No	83 (51)	23 (36)	60 (60)	0.003
Number of medical visits	N=163			
1 or fewer visits	73 (45)	12 (19)	61 (61)	
2 or more visits	90 (55)	51 (81)	39 (39)	<0.001
Where receive HIV care	N=135			
CHN	108 (80)	54 (90)	54 (72)	
Elsewhere	27 (20)	6 (10)	21 (28)	0.009
First viral load test	N=163			
Detectable	11 (7)	4 (36)	7 (64)	
Undetectable	96 (59)	52 (54)	44 (46)	0.263
(Missing)	56 (34)	7 (13)	49 (87)	
Last viral load test	N=163			
Detectable	34 (21)	15 (44)	19 (56)	
Undetectable	79 (48)	43 (54)	36 (46)	0.314
(Missing)	50 (31)	5 (10)	45 (90)	
First CD4 test	N=163			
0–199	14 (8.5)	7 (13)	7 (16)	
200–349	14 (8.5)	10 (18.5)	4 (9)	
350–499	21 (13)	10 (18.5)	11 (24)	
500+	50 (31)	27 (50)	23 (51)	0.544
(Missing)	64 (39)	9 (14)	55 (86)	
Last CD4 test	N=163			
0–199	6 (4)	3 (6)	3 (9)	

Characteristic	Overall N (%)	Peer Leader (N=63)	Not a Peer Leader (N=100)	Chi-square p-value
200–349	12 (7)	5 (10)	7 (21)	
350–499	16 (10)	8 (17)	8 (23)	
500+	48 (29)	32 (67)	16 (47)	0.337
(Missing)	81 (50)	15 (19)	66 (81)	

Some variables have missing data. One participant is deceased. Detectable viral load = 200 copies per ml.

For viral load and CD4 variables, column (for overall data) and row percentages are reported; for these variables chi-square is based on non-missing data.

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Table 4

Bivariate and Multivariable Analysis of Demographic and Types of Service Use and Care associated with Peer Leadership among New York City transgender women of color living with HIV, N = 140

Characteristic	Bivariate OR (95% CI)	P-value	Multivariable AOR (95% CI)	P-value
Education				
Up to 12 th grade or GED	--	--	--	--
Some college or more	2.31 (1.01–5.27)	0.043	3.59 (1.08–11.96)	0.037
Relationship status				
Single	--	--	--	--
In relationship	3.31 (1.44–7.63)	0.004	3.57 (1.07–11.89)	0.038
Past 6 months, homeless or unstable housing				
Yes	0.23 (0.08–0.62)	0.004	0.14 (0.03–0.55)	0.005
No	0.73 (0.28–1.88)	0.508	0.49 (0.13–1.81)	0.284
Don't know/refused	--	--	--	--
Asylum services				
Yes	6.50 (3.16–13.38)	<0.001	6.05 (2.32–15.78)	<0.001
No	--	--	--	--
Mental health referral				
Yes	2.61 (1.36–4.99)	0.003	1.88 (0.75–4.73)	0.181
No	--	--	--	--
Number of HIV care visits				
1 or fewer visits	--	--	--	--
2 or more visits	6.65 (3.15–14.02)	<0.001	4.02 (1.45–11.18)	0.008

OR = Odds ratio. AOR = Adjusted odds ratio. Some variables have missing data. One participant is deceased. Detectable viral load > 200 copies per ml.