Perceived HIV Acquisition Risk and Low Uptake of PrEP Among a Cohort of Transgender Women With PrEP Indication in the Eastern and Southern United States

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Introduction: Preexposure prophylaxis (PrEP) is effective in preventing HIV among adherent users. However, PrEP uptake among transgender women is low, and current prescribing guidelines from the Centers for Disease Control and Prevention (CDC) are not specific to transgender women. Self-perceived risk of HIV among those who are PrEP-indicated is not well understood.

Methods: This cross-sectional analysis included 1293 transgender women screened at baseline from March 2018 to May 2020 for a multisite, prospective cohort study. We compared the prevalence of PrEP indication using current CDC prescribing criteria versus transgender women–specific criteria developed by study investigators with community input. We identified factors associated with study-specific PrEP indication and factors associated with self-perceived low to no HIV risk among those who were PrEP-indicated. We also calculated descriptive statistics to depict the PrEP care continuum.

Results: PrEP indication prevalence using transgender women–specific criteria was 47% (611), 155 more than who were identified using the CDC criteria. Eighty-three percent were aware of PrEP, among whom 38% had ever used PrEP. Among PrEP ever users, 63% were using PrEP at the time of the study. There were 66% of current PrEP users who reported 100% adherence within the previous 7 days. Among those who were PrEP-indicated, 13% were using and adherent to PrEP at the time of the study. More than half (55%) of PrEP-indicated participants had low or no self-perceived HIV risk.

Conclusions: These findings suggest that further guidance is needed for health care providers in prescribing PrEP to transgender women. Greater uptake and adherence are also needed for optimal effectiveness.

Key Words: transgender women, PrEP indication, health belief model, self-perceived risk, HIV prevention

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INTRODUCTION

Transgender women experience a disproportionate burden of HIV, with an estimated prevalence of approximately 14%–28%.[1,2] Preexposure prophylaxis (PrEP) has been established as a highly efficacious means for preventing HIV acquisition,[3–5] even in the presence of hormone

therapy.[6] However, there is still a dearth of evidence concerning the effectiveness of PrEP among transgender women. Although there is research that has explored facilitators and barriers to oral, daily PrEP usage and acceptability of PrEP among transgender women, much of this research has grouped this population with cisgender men who have sex with men (MSM).[7,8] In addition, this work has not explored the role of self-perceived HIV acquisition risk in the context of PrEP use. Thus, there is a need to focus on PrEP implementation efforts among transgender women and identify means to improve PrEP uptake.

Given the high burden of HIV among transgender women, PrEP uptake is likely to have high effect in reducing acquisition for those who are sexually active (or PrEP-indicated).[9] The social marginalization and oppression experienced by transgender women have simultaneously led to increased risk of HIV acquisition (compared with the general population) and decreased access to HIV prevention services.[10] Social exclusion (eg, exclusion from formal employment and education) and unmet need for gender affirmation are associated with increased behavioral risk factors of HIV acquisition such as engagement in sex work and condomless receptive anal sex.[11] Adverse childhood events, which are more prevalent among transgender people than cisgender people,[12] have also been associated with high HIV acquisition risks.[13] However, uptake of oral, daily PrEP remains low among transgender women.[11] Furthermore, current PrEP indication guidelines from the Centers for Disease Control and Prevention (CDC) are not specific to transgender women because they only explicitly provide criteria for cisgender MSM, heterosexually active cisgender men and women, and people who inject drugs.[14] Although the guidelines acknowledge that transgender people could potentially benefit from PrEP,[14] no guidelines have been developed specifically for transgender women despite being one of the most affected populations in the US HIV epidemic. In practice, the CDC PrEP prescribing criteria for MSM are often applied to transgender women.

Along with the need for PrEP prescribing criteria that are specific to transgender women, it is also important to ensure that those who are indicated for PrEP are aware of their risk of HIV acquisition. Behavioral models, such as the Health Belief Model, posit that a person's perceived risk of adverse health is important in determining whether they will adopt a given health intervention.[15] Such models suggest that an individual's self-perceived threat for a given disease, along with their perception of the level of efficacy of a health intervention for that disease, will dictate whether they will adopt a given health behavior.[15] Thus, it is possible that transgender women who are behaviorally indicated for PrEP use, but who do not perceive themselves as being at risk of HIV acquisition, may be less likely to inquire about or start using PrEP. Research is needed to evaluate perceived risk of HIV acquisition among transgender women in relation with PrEP indication.

This analysis evaluated the use of PrEP prescribing criteria that are specific to the HIV acquisition risks of transgender women and the self-perceived risk of HIV among these women. We also reported levels of engagement throughout the PrEP care continuum. These analyses aimed to identify gaps in PrEP engagement among transgender women and potential opportunities where PrEP messaging may be improved for this population.

METHODS

Study Design and Setting

The American Cohort to Study HIV Acquisition Among Transgender Women (known to participants as the LITE study) is a multisite, observational cohort study enrolling HIV-negative transgender women (N = 1293 as of May 2020) across the southern and eastern United States. The cohort includes 2 arms: a site-based cohort (N = 747) in 6 eastern and southern US cities (Atlanta, Baltimore, Boston, Miami, New York City, and Washington, DC) and an online cohort (N = 546) in more than 50 metropolitan areas throughout the eastern and southern United States. The purpose of the study is to follow-up participants over a two-year period to estimate HIV incidence and describe the factors associated with HIV acquisition. Participants complete sociobehavioral surveys and biological testing for HIV, on a quarterly basis for site-based participants and every 6 months for online cohort participants. Participants in the site-based cohort also receive annual sexual transmitted infection (STI) testing (syphilis, gonorrhea, and chlamydia) and biospecimen collection. Survey topics for both online and site-based cohorts span domains of sociodemographic characteristics, gender affirmation and pride, general health, sexual health and behaviors, mental health and substance use, and social experiences including violence, discrimination, and social support. Study design and implementation were informed by ongoing discussions with a Community Advisory Board, with membership spanning the cohort's geographic region and through formative research.[16,17] Methods associated with the site-based cohorts are previously described in the published protocol.[18] This study is a secondary analysis using cross-sectional data from baseline study visits completed between March 2018 and May 2020. All study procedures were reviewed and approved by the Johns Hopkins School of Medicine institutional review board (IRB) for all study sites.

Participant Selection

Participants were recruited through online advertisements on social media and dating apps (both cohorts) and through traditional convenience sampling methods including peer referral, fliers, and referrals from clinics and community-based organizations (site-based cohorts only). Eligibility criteria included being 18 years or older; endorsing a transfeminine identity based on a two-step measure of being assigned male sex at birth and identifying as female sex, gender nonconforming, nonbinary, or being on the transfeminine spectrum; residing in one of the 6 site-based cities (site-based cohort) or one of the 50 eastern and southern cities (online cohort); testing negative for antibodies to HIV on screening using oral specimen testing (online cohort) or the OraSure HIV self-test (site-based cohort); speaking English

and/or Spanish language; and providing consent to participate in at least the baseline study visit.

Outcomes of Interest

PrEP Indication Definition

This article compares the CDC's definition of PrEP indication used for MSM, which is often applied to transgender women, with a definition developed by the LITE study investigators with community input and based on HIV risk factors that are more specific to transgender women. The current CDC PrEP prescribing criteria include having any cisgender male sex partners in the past 6 months, not being in a monogamous sexual partnership with a known HIV-negative cisgender man, and at least one of the following: any anal sex act without a condom in the past 6 months or having an STI within the past 6 months (Table 1).[14] Given the frequency of follow-up and recall periods in the LITE study, laboratory-confirmed or self-reported STI diagnosis in the past 3 months and condomless sex act during the last sexual encounter were used as proxies for these CDC indicators. PrEP indication criteria suggested by the LITE study investigators with community input (in addition to the CDC criteria) include the following: (1) recent sex work (within the past 3 months), (2) use of postexposure prophylaxis, (3) recent sex act with a partner living with HIV or of unknown HIV status (within the past 3 months), and (4) needle sharing when injecting drugs within the past 12 months. Participants reported "yes" or "no" for each of these criteria on the sociobehavioral survey.

TABLE 1. Comparing CDC and LITE Study PrEP Prescribing Criteria

PrEP Indication Criteria	
CDC (MSM Specific)	**Study-Specific Criteria for TGW (Italicized)**
Current negative HIV serostatus.	Current negative HIV serostatus.
Any cisgender male sex partner within the past 6 mo.	Any cisgender male sex partner within the past 6 mo.
Not in a monogamous sexual partnership with an HIV-negative cisgender male sex.	Not in a monogamous sexual partnership with an HIV-negative cisgender male sex.
In addition, at least one of the following:	And at least one of the following:
Anal sex without a condom within the past 6 mo	Anal sex act without a condom within the past 6 mo
Having an STI within the past 6 mo	Having an STI within the past 6 mo
	Report current sex work (within the past 3 mo)
	Reported use of postexposure prophylaxis
	Sex act with a partner living with HIV within the past 3 mo
	Sex act with a partner of unknown HIV status with in the past 3 mo
	Needle sharing of injection drugs within the past 12 mo

Self-Perceived Risk of HIV Acquisition

Perceived risk of HIV acquisition was measured by the question "How high do you think your risk of HIV infection is?", with answer choices of no risk, low, medium, or high risk. For this analysis, we dichotomized responses to combine "no" or "low" risk to a low-risk category vs. a high-risk category if they reported "medium" or "high" risk.

Variables of Interest

We examined age, race, education, employment, health insurance, income level, drug use, social support, homelessness, adverse childhood experiences (ACEs), and experiences of psychological violence for associations with PrEP indication. Age was dichotomized to compare participants older than 30 years with those younger than 30 years (the median age was 28 years; thus, we chose to consider those younger than 30 years as "young" participants). Low income was defined as living below the federal poverty line. Social support was measured through a modified version of the California Health Interview Survey Social Support Index in which participants answered 5 questions (eg, "How often have you had someone available to take care of you if you are sick?") and provided responses on a 5-point Likert scale ranging from 0 (none of the time) to 4 (all the time), with response totals ranging from 0 to 20. Response totals more than 10 were categorized as "high" social support (Cronbach alpha: 0.87).[19] We used the Drug Abuse Screening Test-10 tool[20] to screen for drug use disorder based on activity within the past 12 months. The Drug Abuse Screening Test-10 provides a score from 1 to 10, and scores of 3 or greater are classified as moderate to severe substance use disorder (Cronbach alpha: 0.72). We also used the CDC's Behavioral Risk Factor Surveillance System's ACE questionnaire, which measures instances of child abuse or neglect.[21] ACE scores ranged from 0 to 8, and the higher the score, the greater the number of reported adverse childhood events (Cronbach alpha: 0.64). Responses were dichotomized with those reporting 3 or fewer ACEs in the "low" ACE group and those reporting 4 or more in the "high" ACE group. Participants also reported whether they experienced any occurrence of psychological violence within the past 3 months. This was defined as any occurrence in which a participant had been insulted, belittled, intimidated, or threatened to disclose their gender identity to others without their consent.

PrEP Care Continuum

In the survey, participants reported whether they had heard of daily, oral PrEP, if they had ever taken PrEP, if they were currently using PrEP, and how adherent they were in their PrEP use. Self-reported PrEP use in the past 30 days before the survey was classified as current PrEP use. Adherence to daily, oral PrEP was defined as not missing a dose of PrEP medication within the past 7 days before the survey. This level of adherence is based on lack of evidence that any dosing less than 7 pills in 7 days is protective for individuals using exogenous hormones.[22]

TABLE 2. Sociodemographics of TGW by PrEP Indication Status (N= 1293) (as of January 5, 2020)

	Total = 1293	PrEP Indication by CDC = 456	Transgender-Enhanced PrEP Indication* = 155	
Demographics	**N (%)**	**N (%)**	**N (%)**	***P***
Study site				0.99
Baltimore, MD	78 (6)	38 (8)	12 (8)	
Boston, MA	170 (13)	52 (11)	16 (10)	
New York City, NY	221 (17)	90 (20)	34 (22)	
Atlanta, GA	64 (5)	30 (7)	9 (6)	
Miami, FL	92 (7)	43 (9)	15 (10)	
Washington, DC	122 (9)	48 (11)	14 (9)	
Online	546 (42)	155 (34)	55 (36)	
Age, yrs				
Younger than 30	735 (57)	284 (62)	76 (49)	
30 or older	554 (43)	172 (38)	79 (51)	0.004
Race				
Non-Hispanic/Latinx White	676 (53)	184 (41)	58 (38)	
Non-Hispanic/Latinx Black	174 (14)	93 (21)	20 (13)	
Hispanic/Latinx (any race)	109 (9)	54 (12)	23 (15)	0.08
Other	317 (25)	120 (27)	52 (34)	
Education				
High school or less	360 (28)	164 (36)	56 (37)	0.96
Some college or more	921 (72)	290 (64)	98 (64)	
Employment				
No employment	517 (41)	190 (43)	63 (42)	
Employed (part-time)	279 (22)	105 (24)	40 (27)	
Employed (full-time)	457 (36)	151 (34)	47 (31)	0.71
Health insurance				
Yes	1036 (80)	350 (78)	116 (76)	0.65
No	243 (19)	101 (22)	37 (24)	
Low income				
Below poverty level	418 (38)	164 (42)	73 (52)	0.06
Above poverty level	675 (62)	224 (58)	69 (49)	
Drug abuse screening test-10				
Above moderate drug use	361 (28)	148 (33)	62 (41)	0.08
Below moderate drug use	917 (72)	303 (67)	91 (60)	
Social support				
Low social support score	568 (45)	197 (44)	81 (54)	0.04
High social support score	684 (55)	249 (56)	69 (46)	
Ever experienced homelessness				
Yes	557 (44)	238 (53)	81 (53)	0.93
No	720 (56)	215 (47)	72 (47)	
Adverse childhood experiences				
Low adverse childhood experiences	693 (55)	229 (51)	67 (45)	0.16
High adverse childhood experiences	571 (45)	217 (49)	83 (55)	
Recent threat of violence (within the past 3 mo)				
Yes	508 (47)	205 (55)	67 (44)	0.75
No	570 (53)	171 (45)	85 (56)	

*Enhanced PrEP Indication refers to participants who were considered to be indicated for PrEP based on study criteria but not based on CDC criteria.

Analysis

PrEP Indication

We compared the number of additional participants that would be indicated for PrEP when using the study-specific PrEP indication definition versus the CDC's definition. We then conducted bivariable and multivariable analyses to determine the factors associated with having indications for PrEP using our revised criteria for transgender women. We estimated adjusted prevalence ratios (aPR) using a multivariable Poisson regression model with robust variance, adjusting for race/ethnicity, education, health insurance, drug use, lifetime housing stability, ACEs score, experiences of psychological violence victimization within the past 3 months, and study site. To build the multivariable

TABLE 3. Sociodemographics Associated With the LITE Study–Specific PrEP Indication in TGW (N = 1293)

Demographics	PR (95% CI)	*P*	aPR (95% CI)	*P**
Study site				
Baltimore, MD	Ref	—	Ref	—
Boston, MA	0.62 (0.49 to 0.80)	<0.001	**0.77 (0.60 to 1.00)**	**0.05**
New York City, NY	0.88 (0.71 to 1.07)	0.20	0.87 (0.71 to 1.06)	0.16
Atlanta, GA	0.95 (0.74 to 1.22)	0.70	1.02 0.79 to 1.33)	0.86
Miami, FL	0.98 (0.78 to 1.24)	0.89	0.90 (0.71 to 1.15)	0.39
Washington, DC	0.79 (0.62 to 1.01)	0.06	0.87 (0.69 to 1.11)	0.26
Online	0.60 (0.49 to 0.73)	<0.001	**0.78 (0.63 to 0.96)**	**0.02**
Race				
Non-Hispanic/Latinx White	Ref	—	Ref	—
Non-Hispanic/Latinx Black	1.81 (1.43 to 2.31)	<0.001	**1.53 (1.28 to 1.83)**	**<0.001**
Hispanic/Latinx	1.97 (1.61 to 2.41)	<0.001	**1.76 (1.47 to 2.11)**	**<0.001**
Other	1.52 (1.16 to 1.98)	0.002	**1.39 (1.19 to 1.62)**	**<0.001**
Education				
High school or less	Ref	—	Ref	—
Some college or more	0.69 (0.66 to 0.72)	<0.001	**0.82 (0.72 to 0.92)**	**0.001**
Health insurance				
No	Ref	—	Ref	—
Yes	0.79 (0.71 to 0.89)		0.96 (0.84 to 1.09)	0.52
Drug abuse screening test				
Below moderate drug use	Ref	—	Ref	—
Above moderate drug use	1.35 (1.14 to 1.61)	0.001	**1.34 (1.19 to 1.52)**	**<0.001**
Ever experienced homelessness				
No	Ref	—	Ref	—
Yes	1.44 (1.34 to 1.54)	<0.001	**1.15 (1.02 to 1.29)**	**0.025**
Adverse childhood experiences				
Low adverse childhood experiences	Ref	—	Ref	—
High adverse childhood experiences	1.23 (1.11 to 1.37)	<0.001	1.04 (0.93 to 1.18)	0.48
Recent occurrence of psychological violence (less than 3 mo)				
No	Ref	—	Ref	—
Yes	1.23 (1.06 to 1.43)	0.006	**1.19 (1.06 to 1.34)**	**0.003**

*All bolded entries represent adjusted estimates that were statistically significant at a 0.05 alpha level.

model, we conducted the Pearson χ^2 test for each variable and selected those that were statistically significant at 0.10 alpha level. We excluded poverty level and employment status because they were highly correlated with education.

Self-Perceived HIV Risk Among PrEP-Indicated Participants

Among those who were PrEP-indicated based on those criteria, we repeated the same model-building procedures to identify factors associated with reporting self-perceived low HIV risk. The variables for this model included age (ie, being younger than 30 years or aged 30 years or older), education level, substance use, social support, lifetime housing stability, and ACEs score. We also calculated descriptive statistics to characterize the PrEP care continuum and tabulated the percentage of participants who were aware of PrEP, had health insurance coverage, currently used PrEP, and were adherent to PrEP among those who were PrEP-indicated based on transgender-specific criteria. Study site and current PrEP use (within the past 30 days) were included in the model. All analyses were conducted using Stata 15 software.[23]

RESULTS

Descriptive Characteristics

As of May 2020, 1293 participants who showed a negative result for HIV test were enrolled in the baseline visit. Among them, 57% were younger than 30 years, 14% were identified as non-Hispanic/Latinx Black, 28% reported less than high school education, and 72% endorsed low perceived HIV acquisition risk (Table 2). Eleven percent of participants reported current PrEP use at the time of enrollment.

Differences in Level of PrEP Indication Based on Study Versus CDC Criteria

Of the 1293 participants, 456 (35%) participants (Table 2) were indicated for PrEP based on CDC criteria compared with 611 (47%) participants using the enhanced criteria for transgender women. Thus, an additional 155 participants were

TABLE 4. Factors Associated With Self-Perceived Low Risk of HIV Acquisition Among PrEP-Indicated TGW (N = 504)

Demographics	PR (95% CI)	*P*	aPR (95% CI)	*P**
Study site				
Baltimore, MD	Ref	—	Ref	—
Boston, MA	1.05 (0.72 to 1.54)	0.79	1.01 (0.68 to 1.52)	0.95
New York City, NY	1.07 (0.77 to 1.50)	0.68	1.12 (0.79 to 1.59)	0.51
Atlanta, GA	1.17 (0.78 to 1.74)	0.45	1.05 (0.68 to 1.62)	0.82
Miami, FL	1.05 (0.72 to 1.55)	0.79	1.09 (0.73 to 1.63)	0.68
Washington, DC	1.06 (072 to 1.55)	0.78	1.00 (0.67 to 1.49)	0.996
Online	1.20 (0.87 to 1.65)	0.27	1.09 (0.78 to 1.53)	0.60
Age, yrs				
30 or older	Ref	—	Ref	—
Younger than 30	1.21 (1.05 to 1.39)	0.007	**1.26** (**1.04** to **1.53**)	**0.02**
Education				
High school or less	Ref	—	Ref	—
Some college or more	1.17 (0.97 to 1.41)	0.10	1.11 (0.91 to 1.36)	0.29
Drug abuse screening test-10				
Below moderate drug use	Ref	—	Ref	—
Above moderate drug use	0.78 (0.70 to 0.87)	<0.001	**0.81** (**0.66** to **0.99**)	**0.04**
Social support				
Low	Ref	—	Ref	—
High	1.32 (1.12 to 1.55)	0.001	**1.22** (**1.00** to **1.47**)	**0.05**
Ever experienced homelessness				
No	Ref	—	Ref	—
Yes	0.75 (0.67 to 0.83)	<0.001	0.85 (0.70 to 1.03)	0.10
Adverse childhood experiences				
Low adverse childhood experiences	Ref	—	Ref	—
High adverse childhood experiences	0.86 (0.73 to 1.01)	0.08	0.95 (0.79 to 1.14)	0.57
Currently using PrEP? (within the past 30 days)				
No	Ref	—	Ref	—
Yes	0.84 (0.69 to 1.03)	0.09	0.86 (0.69 to 1.06)	0.16

*All bolded entries represent adjusted estimates that were statistically significant at a 0.05 alpha level.

reclassified as PrEP-indicated when using the enhanced study criteria. Thus, overall, the prevalence of PrEP indication was 12% higher based on the enhanced study criteria compared with that in the CDC criteria. Those who were PrEP-indicated based on transgender women–specific criteria were more likely to be aged 30 years or older ($P = 0.004$) and were more likely to report low social support ($P = 0.04$) than those indicated by CDC criteria only. A greater percentage of these participants also had an income below the federal poverty level (52% vs. 42%) and more reported above moderate to severe drug use (41% vs. 33%); however, these differences were not statistically significant ($P = 0.06$ and $P = 0.08$, respectively).

In multivariable analyses, participants who were non-Hispanic/non-Latinx Black (aPR: 1.53, 95% CI: 1.28 to 1.83), Hispanic/Latinx (aPR: 1.76, 95% CI: 1.47 to 2.11), or other race (aPR: 1.39, 95% CI: 1.19 to 1.62) were more likely to be PrEP-indicated compared with those who were non-Hispanic/non-Latinx White. Those who reported moderate to severe drug use (aPR: 1.34, 95% CI: 1.19 to 1.52), lifetime homelessness (aPR: 1.15, 95% CI: 1.02 to 1.29), or a recent (within the past 3 months) occurrence of psychological violence (aPR: 1.19, 95% CI: 1.06 to 1.34) were more likely to be PrEP-indicated. Geographic location, participation in the online cohort, and education were inversely associated with PrEP indication (Table 3).

High Prevalence of Self-Perceived Low HIV Risk Among Those PrEP Indicated

Among the 504 participants with available data on self-perceived HIV risk and who were indicated for PrEP based on the study criteria, 55% perceived themselves as being of low or no risk of HIV infection (Table 4). This percentage remained the same after excluding participants who reported current PrEP usage (ie, PrEP use within the past 30 days). Being younger than 30 years (aPR: 1.26, 95% CI: 1.04 to 1.53) and having high social support (aPR: 1.22, 95% CI: 1.00 to 1.47) were associated with higher prevalence of self-perceived low or no HIV risk. Having moderate to severe drug use was associated with higher self-perceived HIV risk (aPR: 0.81, 95% CI: 0.66 to 0.99).

PrEP Care Continuum Among Transgender Women

Among the 611 participants who were indicated for PrEP based on study criteria, 83% were aware of PrEP (Fig. 1). Among those aware of PrEP, 38% had ever taken

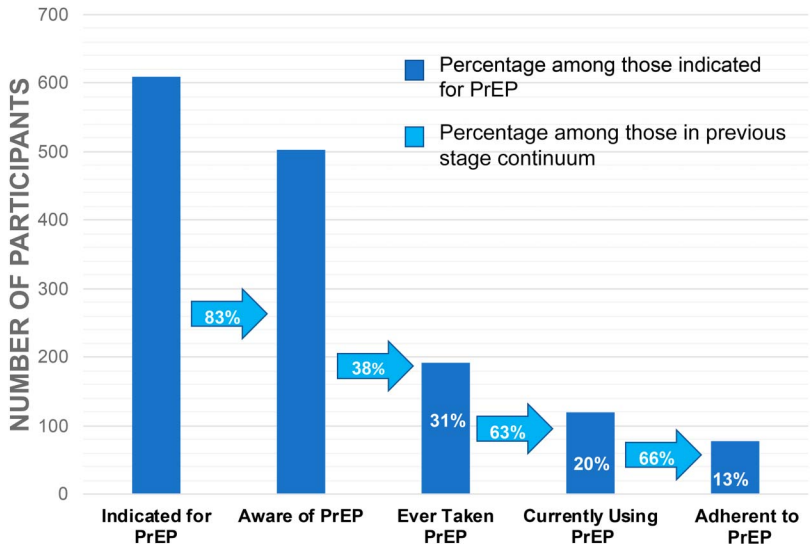

FIGURE 1. PrEP care continuum among participants with indications for PrEP based on LITE study criteria, May 2020. full color online

PrEP before the study. Sixty-three percent of those who had ever taken PrEP were using PrEP at the time of the study, and 66% of PrEP users reported 100% adherence within the previous 7 days of the survey (ultimately 13% of those indicated for PrEP). This summary of the PrEP care continuum was similar when using the CDC criteria (see Appendix, Supplemental Digital Content, http://links.lww.com/QAI/B673). There were 25 participants who reported using PrEP at the time of screening; however, they were not indicated for PrEP at the time of participation based on study criteria.

DISCUSSION

In this study, we found that there would be an additional 12% of study participants who would be PrEP-indicated using prescribing criteria specific to transgender women compared with those using the current CDC prescribing criteria. These participants could potentially benefit from PrEP if health practitioners used evidence-based PrEP indication criteria specific to the HIV risk factors of transgender women. This finding highlights the importance for health practitioners to become educated on these specific criteria to identify and prescribe PrEP to transgender women more efficiently. In addition, participants who were identified by transgender women–specific criteria for PrEP use were those who may experience greater risk environments because they had lower social support, higher levels of poverty, and higher substance use. Thus, using these specific prescribing criteria may identify transgender women subgroups with higher unmet need for PrEP. These findings suggest that guidelines must include criteria that are specific to transgender women (and other transgender or gender nonbinary individuals) to accurately determine PrEP indication in these populations and increase PrEP access among those who can benefit the most.

Being non-Hispanic/Latinx Black, Hispanic/Latinx, having above-average drug use, ever being homeless, or having a recent (within the past 3 months) occurrence of psychological violence were associated with a higher prevalence of PrEP indication. These factors (ie, racial and ethnic minority status, substance use, homelessness, and psychological violence) have also been shown in related literature to be associated with having less access to health care.[24,25] This lack of access would, thus, hinder transgender women from engaging with a health care professional who would be able to prescribe PrEP or even identify them as candidates for PrEP use.

The study also found a high proportion (more than half) of those indicated for PrEP had reported that they had no or low risk of acquiring HIV, even after analytically excluding participants who reported PrEP use. This is consistent with literature, which suggests that perceived susceptibility to HIV can be a critical barrier in the uptake of PrEP.[26] Factors associated with no or low HIV risk were reporting at younger age, greater educational levels, and high social support. Although younger age, higher levels of education, and high social support are factors traditionally associated with better health outcomes, HIV incidence is increasing faster among adolescents and young adults and are priority groups for HIV prevention.[27] Generally, these findings confirm the greater need for health practitioners to proactively engage with these patient populations and to increase opportunities for transgender women to learn about and access PrEP. PrEP interventions to improve HIV risk perceptions may benefit from reaching the social networks of younger age transgender women and those with high social support.

We also found that among all participants who had indications for PrEP, there was a low proportion currently using and adherent to daily, oral PrEP at the time of the study (13%). Although most participants with indications for PrEP were aware of PrEP (83%), only 38% had ever taken a medication regimen at the time of the study. Thus, there is a need for more PrEP implementation efforts among transgender women, including comprehensively identifying and counseling those who could most benefit from PrEP and exploring ways to support adherent usage once PrEP is prescribed.

This study had several strengths and limitations. One of the strengths is that it uses one of the largest samples of transgender women (more than 1200) recruited across multiple metropolitan areas in the eastern and southern United States. Moreover, although there have been several studies exploring PrEP indications among transgender women, this is one of the only studies to explore the level of self-perceived low HIV risk among those who have indications for PrEP. One of the limitations of the data is that more than 100 participants with indications for PrEP did not report their "self-perceived" risk and were not included in this analysis. Although this represents less than 10% of the sample, study findings concerning factors associated with self-perceived low or no HIV risk may not reflect all participants with indications for PrEP. In addition, it is possible that the self-perceived HIV risk variable is misclassified because it was measured through self-report, and previous research suggests that respondents tend to underreport HIV risks.[28] Nonetheless, this further affirms the point that participants who may benefit from PrEP may not self-select themselves to seek care. In addition, although we included occurrence of sharing needles during injection drug use as part of criteria for study-specific PrEP indications, we did not include occurrences of sharing needles when injecting silicone, fillers, or when injecting hormones. However, we recommend to practitioners to consider any reported needle sharing practices when considering PrEP indication for transgender women.

CONCLUSIONS

This study found that expanding current CDC PrEP prescribing criteria to be specific to transgender women can identify a sizeable number of additional women who could benefit from PrEP. Both PrEP uptake and adherence, however, are low among transgender women who are indicated for PrEP, which is matched by low self-perceived risk of HIV acquisition. These findings highlight the need for transgender women to receive individualized PrEP recommendations and effective education concerning the benefits of PrEP to support PrEP uptake and adherence among those who need it the most.

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