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HIV pre-exposure prophylaxis indication and readiness among HIV-uninfected transgender women in Ho Chi Minh City, Vietnam

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Abstract

Few studies have considered acceptability of HIV pre-exposure prophylaxis (PrEP) among transgender women in Southeast Asia. We assessed PrEP indications and readiness among a sample of HIV-uninfected transgender women in Ho Chi Minh City, Vietnam. Of 168 HIV-uninfected transgender women, 72.6% met criteria for PrEP based on United States CDC guidelines. PrEP indication was inversely associated with PrEP interest (76.0% interested among those for whom PrEP was indicated; 89.1% among those for whom it was not; aOR 0.16, 95% CI 0.04–0.67, *P*=0.01). PrEP readiness, defined as having heard of, being interested in taking, and believing that PrEP is efficacious, was low (7.7%). The results of this study indicate potential need for PrEP among transgender women in Ho Chi Minh City, but very low awareness of PrEP in the community. Future PrEP implementation programs should include counseling on HIV risk and eligibility for PrEP to ensure that PrEP is available to those who may benefit the most from it.

INTRODUCTION

Worldwide, transgender women bear a disproportionate burden of the HIV epidemic.[1,2] Compared to cisgender adults of reproductive age, transgender women have nearly 50 times the odds of HIV infection.[1] Furthermore, transgender women who engage in sex work have substantially elevated HIV prevalence compared to cisgender female sex workers.[2] To date, evidence of the HIV epidemic among transgender women in Vietnam remains scarce. A previous study in Ho Chi Minh City found an HIV prevalence of 6.8% among individuals who identified as *bong lo* (an identity primarily used to describe men who have sex with men presenting as feminine).[3,4] Much of the evidence of HIV prevalence among

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Compliance with Ethical Standards

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Informed consent was obtained from all individual participants included in the study.

transgender women in Southeast Asia arises from Thailand, where HIV prevalence has been estimated between 9.2 and 13.5%.[5,6]

Although transgender women have been eligible for participation in several HIV pre-exposure prophylaxis (PrEP) studies[7,8], few transgender women participants have been included in these studies and as a result limited evidence exists related to the use of PrEP for transgender women.[9] Although PrEP has been found to be highly efficacious for preventing HIV infection in analyses pooling men who have sex with men (MSM) and transgender women[8], a subgroup analysis from the iPrEx study of transgender women participants demonstrated no overall effect of PrEP on HIV incidence.[10] However, none of the transgender women who seroconverted had detectable drug at the time of their seroconversion visit, suggesting that adherence may have played a role in the lack of efficacy in this subgroup. The results of this subgroup analysis send a strong signal that PrEP programs need to be designed and implemented with specific attention to the unique barriers and facilitators to PrEP uptake and adherence among transgender women in mind.

Although PrEP is not currently available in much of Southeast Asia, demonstration projects are planned for implementation.[11] An early understanding of PrEP indication, interest, and readiness prior to implementation of PrEP will help guide the development of PrEP programs. Here, we assess PrEP indication and readiness among a sample of HIV-uninfected transgender women in Ho Chi Minh City, Vietnam, to inform the development of future PrEP interventions with this population.

METHODS

Participants and procedures

The TransVN study is a cross-sectional survey of 205 transgender women implemented in Ho Chi Minh City between March and April 2015. A detailed description of the study procedures has been published elsewhere.[Colby et al, under review] Briefly, eligibility criteria were age ≥18 years, born biologically male, resident of Ho Chi Minh City, Vietnamese citizen, and self-identified as female gender. Participants were recruited through social networks starting with 5 transgender women who constituted the technical advisory board for the study. Participants who agreed to participate came to a central location where they gave informed consent. Demographic and behavioral data were collected using a standardized questionnaire. Blood was taken for syphilis and HIV testing; participants testing positive were referred for treatment. The study was approved by the Institutional Review Boards at the University of Pittsburgh in the USA and the Hanoi School of Public Health in Vietnam.

Measures

Demographics—Participants were asked their current age (categorized as 18 to 20, 21 to 25, 26 to 30, 31 to 40, or 41+ years of age), birthplace (categorized as born in Ho Chi Minh City versus born outside of Ho Chi Minh City), education (categorized as high school education or above), and average monthly income (categorized as 0 to 3,000,000 VND [approximately USD$135], 3,100,000 to 5,000,000 VND [approximately USD$225],

5,100,000 to 10,000,000 VND [approximately USD$450], or more than 10,000,000 VND). Participants were categorized as having a regular partner if they reported a regular partner of any gender.

HIV Testing—Participants were asked if they had ever had an HIV test, and, if so, when their last HIV test was. Participants who reported having an HIV test within the last 12 months were coded as having an HIV test in the last year.

HIV Knowledge—HIV knowledge was assessed by asking participants a series of nine true-false statements, including 1) "A person who is infected with HIV can look healthy on the outside" [TRUE]; 2) "The risk for HIV infection can be reduced by only having sex with one uninfected partner" [TRUE]; 3) "The risk for HIV infection can be reduced by always using condoms correctly for anal or vaginal sex" [TRUE]; 4) "HIV can be transmitted by eating a meal with an HIV infected person" [FALSE]; 5) "The risk for HIV infection can be reduced by avoiding anal or vaginal sex and practicing other forms of sex such as masturbation or oral sex" [TRUE]; 6) "Transgender people are at higher risk for HIV than other people in Vietnam" [TRUE]; 7) "There is a medicine that can be taken every day to prevent HIV infection" [TRUE]; 8) "There is a medicine that can be taken after unsafe sex to prevent HIV infection" [TRUE]; and 9) "There is an effective vaccine to prevent HIV infection" [FALSE].

Psychosocial—Hazardous alcohol use was assessed by the short-form AUDIT scale.[12] Self-esteem was measured with the Rosenberg Self-Esteem Scale.[13]

Sexual Abuse—Participants were asked if they had ever been forced to have sex as an adult (age 18 or older), and if they had ever had any sexual experiences with an individual who was aged 18 or older when they were under 18 years of age, and if they considered that experience to be sexual abuse.

PrEP Readiness—PrEP was briefly described to participants as a new method for preventing HIV that involves taking a daily pill by mouth. It was explained to participants that this medication works to keep HIV from establishing infection, and that studies have shown it to reduce the risk of HIV infection by up to 92%. Participants were asked if they had heard of PrEP prior to taking the survey, how efficacious they perceived PrEP to be (coded as not at all effective, slightly effective, moderately effective, very effective, or unsure), and if they were interested in taking PrEP (coded as very interested, somewhat interested, neutral, somewhat uninterested, very uninterested, or unsure). PrEP readiness was defined as a composite variable that included 1) having heard of PrEP prior to participation in the current study, 2) believing that PrEP is at least moderately effective, and 3) being very or somewhat interested in taking PrEP.

PrEP Indication—PrEP indication was defined based on CDC guidelines for PrEP use for MSM, as current guidelines are not specifically provided for transgender women.[14] Participants who reported inconsistent condom use in the past month (with partners of any gender), commercial sex work in the last month, or who tested positive for syphilis as part of the study or reported that they had been diagnosed with a sexually transmitted infection

(including syphilis, gonorrhea, or chlamydia) in the last year were considered to be eligible for PrEP according to current guidelines. The survey did not collect data on HIV serostatus of sexual partners.

Data analysis

Descriptive characteristics were calculated for the study sample using proportions for categorical variables and medians and interquartile ranges (IQR) for continuous variables. Summary statistics for sociodemographic and psychosocial variables were presented for the study sample by PrEP indication (yes or no). Summary statistics for PrEP-related characteristics were presented for the entire study sample. To assess factors associated with 1) PrEP indication, 2) interest in taking PrEP, and 3) PrEP readiness, three multivariable logistic regression models were built (one per dependent variable). Covariates included in the models were established *a priori,* including age, having been born in Ho Chi Minh City, education, having a regular partner, income, having had an HIV test in the last year, HIV knowledge, hazardous alcohol use, having a history of forced sex, and self-esteem. PrEP indication was also included in models assessing PrEP interest and readiness.

RESULTS

A total of 168 HIV-uninfected transgender women were eligible for this analysis. Table 1 lists descriptive characteristics for the study sample. Of these 168 participants, 90 (53.6%) were 18 to 25 years of age, and most (73.8%) were born in Ho Chi Minh City. Half (50.0%) of the sample had a high school education or above. Approximately half (54.6%) of participants had a regular partner, and less than half (43.9%) had tested for HIV in the last 12 months.

Nearly three-quarters of the sample (72.6%) met criteria for PrEP use. Table 2 lists descriptive results of PrEP-related preferences and beliefs. Of those with indications for PrEP, 61 (50.0%) were currently engaged in sex work, 83 (68.0%) had inconsistent condom use in the past month, 25 (20.5%) had positive syphilis serology, and 22 (18.0%) self-reported a diagnosis of a bacterial STI in the past 12 months. Of all participants, 22 (13.1%) had previously heard of PrEP. After hearing about the uses and efficacy of PrEP, nearly half of participants (48.2%) reported that they thought PrEP would be moderately or very effective, and 40.1% reported that they did not know if PrEP would be effective. Interest in taking PrEP was high, with 79.2% of participants reporting being very or somewhat interested in taking PrEP. Among individuals who had indications for PrEP, 76.0% were very or somewhat interested in PrEP, compared to 89.1% who did not meet criteria for PrEP use. Overall, 7.7% of participants met criteria for being ready for PrEP. Most participants were willing to pay at least a small amount for PrEP.

In a multivariable model assessing factors associated with an indication for PrEP, participants who reported having a regular partner (aOR 5.19, 95% CI 2.03 to 13.30, P=0.001) and who reported a history of forced sex (aOR 11.13, 95% CI 1.22 to 101.89, P=0.03) had higher odds of indication for PrEP. Participants with higher self-esteem scores via the Rosenberger Self-Esteem Scale had reduced odds of PrEP indication (aOR 0.79 per one-unit increase in self-esteem score, 95% CI 0.65 to 0.95, P=0.01).

In a model assessing factors associated with PrEP interest, individuals for whom PrEP was indicated had reduced odds of interest in PrEP (aOR 0.16, 95% CI 0.04 to 0.67, *P*=0.01), and individuals with a history of forced sex had higher odds of PrEP interest (aOR 11.0, 95% CI 1.24 to 97.50, *P*=0.03). Results were similar in a model assessing readiness for PrEP, with individuals with a history of forced sex having higher odds of PrEP readiness (aOR 6.62, 95% CI 1.06 to 41.36, P=0.04), and those for whom PrEP was indicated having lower odds of PrEP readiness (aOR 0.20, 95% CI 0.03 to 1.33, *P*=0.10).

DISCUSSION

In this study of HIV-uninfected transgender women in Ho Chi Minh City, Vietnam, we found high levels of indications for PrEP, primarily driven by engagement in commercial sex and inconsistent condom use. PrEP readiness, which was a composite variable that included having heard of PrEP, was low in this sample, which is likely reflective of the fact that PrEP is not currently widely available in Southeast Asia.

PrEP interest among individuals who were indicated for PrEP was lower than among those who did not meet the criteria for PrEP indication. This finding may be reflective of generally low awareness of PrEP in this community and uncertainty related to the effectiveness of PrEP, which was expected due to the current lack of availability of PrEP in Vietnam. It is possible that individuals who were indicated for PrEP were less likely to report interest in taking PrEP for reasons such as not recognizing that PrEP might be a helpful tool for them, lack of awareness of their own behaviors, or HIV fatalism (feeling that no matter what they did, they would acquire HIV). Transgender women bear substantial burden of HIV globally[1], and HIV fatalism may lead to both increased engagement in risk behaviors and decreased interest in PrEP due to belief that it is fate that they will eventually acquire HIV. A previous study in the United States demonstrated an association between PrEP indication and increased PrEP interest among transgender women.[15] However, participants in studies in the United States may have greater knowledge of PrEP given that there are a number of active and growing PrEP implementation projects.[16,17] PrEP implementation programs and promotion campaigns in Ho Chi Minh City should involve education related to HIV risk and eligibility for PrEP to identify the subset of the population that may benefit the most from PrEP.

Higher self-esteem scores were significantly associated with reduced odds of indications for PrEP in this sample. This finding reflects previous work in the United States[15], which found that social group membership was associated with reduced PrEP indication. Self-esteem is likely related to other psychosocial processes, such as depression or self-stigma, that may influence HIV risk.[18,19] Transgender women in Vietnam are an economically and socially marginalized group. They face individual, community, and structural-level barriers that affect their HIV risk, likely mediated via pathways including self-esteem and depression. The present study suggests that combination HIV prevention interventions that include a behavioral component that addresses mental health issues may have the greatest impact on mitigating HIV risk in this population.

Despite economic marginalization of transgender women, most participants indicated they would be willing to pay for PrEP. Economic marginalization was evidenced by how often participants in this sample engaged in sex work (36.5% overall and 50.0% of those who met PrEP criteria). Employment discrimination is common in Vietnam for transgender individuals[20], which results in limited economic opportunities and increased reliance on sex work. Despite this, less than 4% of individuals in this sample reported that they would not be willing to pay for PrEP. This is a population that may be highly likely to use PrEP if they had access to it.

The results of this study must be considered in the context of some limitations. Data collected as part of this study did not perfectly mirror classification for PrEP indication per CDC guidelines.[14] For example, we did not collect HIV serostatus of partners, so it is possible that some respondents who did not meet other criteria (i.e., commercial sex work, recent sexually transmitted infection, or inconsistent condom use) were in a serodiscordant relationship and thus may have been misclassified. However, data collected likely identify the subset of participants for whom PrEP may be most beneficial. With the exception of syphilis serology, data collected in this study were via self-report. Individuals may have been influenced by social desirability bias, which could affect answers to some questions. Finally, questions referred to hypothetical interest in PrEP. Future studies of PrEP implementation that measure uptake are needed to assess actual use of PrEP among transgender women in Vietnam.

This study found high levels of indications for PrEP but low awareness of PrEP among transgender women in Vietnam. As PrEP implementation programs are planned in Vietnam, attention should be paid specifically to the needs of transgender women, which are likely substantially different than those of MSM. When PrEP becomes available in Vietnam, promotion campaigns that raise awareness of PrEP and educate members of the transgender community about PrEP eligibility may be an important component of increasing readiness for and uptake of PrEP among at-risk transgender women.

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Table 1

Descriptive characteristics of study sample

	PrEP Indicated (N=122)	PrEP Not Indicated (N=46)	Overall (N=168)
Age			
18 to 20 years	24 (19.8%)	15 (31.9%)	39 (23.2%)
21 to 25 years	36 (29.8%)	15 (31.9%)	51 (30.4%)
26 to 30 years	19 (15.7%)	9 (19.2%)	28 (16.7%)
31 to 40 years	17 (13.9%)	1 (2.2%)	18 (10.7%)
41 years or older	26 (21.5%)	6 (12.8%)	32 (19.1%)
Born in Ho Chi Minh City	93 (76.2%)	31 (67.4%)	124 (73.8%)
High school education or above	55 (45.1%)	29 (63.0%)	84 (50.0%)
Average monthly income			
0 to 3,000,000 VND	36 (29.5%)	17 (37.0%)	53 (31.6%)
3,100,000 to 5,000,000 VND	42 (34.7%)	18 (38.3%)	60 (35.7%)
5,100,000 to 10,000,000 VND	31 (25.6%)	9 (19.2%)	40 (23.8%)
>10,000,000 VND	13 (10.7%)	2 (4.3%)	15 (8.9%)
Has a regular partner	77 (65.8%)	12 (26.1%)	89 (54.6%)
Tested for HIV in the last year	56 (46.7%)	16 (36.4%)	72 (43.9%)
HIV knowledge (median, IQR)	6 (4 to 7)	5 (3.5 to 6)	5 (4 to 7)
Ever forced to have sex	25 (20.8%)	1 (2.2%)	26 (15.8%)
Hazardous alcohol use	64 (54.2%)	26 (59.1%)	90 (55.6%)
Self esteem score (median, IQR)	17 (16 to 19)	18 (16 to 21)	18 (16 to 19.5)

Table 2

HIV pre-exposure prophylaxis preferences among HIV-uninfected transgender women (N=168), Vietnam, 2015

	PrEP Indicated (N=122)	PrEP not Indicated (N=46)	Overall (N=168)
Heard of PrEP	16 (13.1%)	6 (13.0%)	22 (13.1%)
Perceived efficacy of PrEP			
Not at all effective	4 (3.3%)	2 (4.4%)	6 (3.6%)
Slightly effective	10 (8.3%)	2 (4.4%)	12 (7.2%)
Moderately effective	24 (19.8%)	11 (23.9%)	35 (21.0%)
Very effective	34 (28.1%)	12 (26.1%)	46 (27.5%)
Not sure/Don't know	48 (39.7%)	19 (41.3%)	67 (40.1%)
Interest in taking daily oral PrEP			
Very interested	69 (57.0%)	30 (65.2%)	99 (59.3%)
Somewhat interested	23 (19.0%)	11 (23.9%)	34 (20.4%)
Neutral	19 (15.7%)	3 (6.5%)	22 (13.2%)
Somewhat uninterested	1 (0.8%)	0	1 (0.6%)
Very uninterested	4 (3.3%)	2 (4.4%)	6 (3.6%)
Not sure/Don't know	5 (4.1%)	0	5 (3.0%)
Readiness for daily oral PrEP	9 (7.4%)	4 (8.7%)	13 (7.7%)
Maximum willing to pay per month for PrEP per month			
I would not pay for PrEP	6 (4.9%)	0	6 (3.6%)
100,000 VND	13 (10.7%)	4 (8.7%)	17 (10.1%)
200,000 VND	27 (22.1%)	12 (26.1%)	39 (23.2%)
400,000 VND	30 (24.6%)	18 (39.1%)	49 (28.6%)
600,000 VND	11 (9.0%)	1 (2.2%)	12 (7.1%)
800,000 VND	4 (3.3%)	0	4 (2.4%)
1,000,000 VND	16 (13.1%)	3 (6.5%)	19 (11.3%)
I don't know	15 (12.3%)	0 (17.4%)	23 (13.7%)