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ORIGINAL PAPER

Factors Associated with PrEP Refusal Among Transgender Women in Northeastern Brazil

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Abstract
Brazil has recently integrated HIV Pre-exposure Prophylaxis (PrEP) into its public health system and offered to key populations such as transgender women (TGW). This study investigates factors associated with PrEP refusal among TGW living in one of the largest and poorest cities of Brazil. We recruited 127 TGW using Respondent Driven Sampling (RDS) in Salvador, Brazil. Latent class analysis (LCA) was used to define acceptability of PrEP. Two latent classes were identified: "high acceptability of PrEP" (91.3%) and "PrEP refusal" (8.7%). PrEP was less acceptable among white TGW and among those age 25 or older, with income above minimum wage (≥ US$252.87), and reporting unprotected receptive anal intercourse with (URAI) causal partners. The findings highlight how nuanced strategies that takes into consideration unique characteristics are needed to effectively address the acceptability of PrEP.

Keywords HIV · Pre-exposure prophylaxis (PrEP) · Prevention · Transgender people · Refusal

Resumen
Brasil ha integrado recientemente la Profilaxis de Preexposición (PrEP) ao VIH en su sistema de salud pública y se ofrece a las poblaciones claves como las mujeres transgénero (TGW). Este estudio investiga los factores asociados al rechazo de la PrEP entre las TGW que viven en una de las ciudades más grandes y más pobres de Brasil. Reclutamos 127 TGW utilizando Respondent Driven Sampling (RDS) en Salvador, Brasil. El análisis de clase latente (LCA) se usó para definir la aceptabilidad de PrEP. Se identificaron dos clases latentes: "alta aceptabilidad de PrEP" (91.3%) y "recusa da PrEP" (8.7%). La PrEP fue menos aceptable entre las TGW de piel blanca, de 25 años o más, con ingresos de > $ 252.87 dólares y con relaciones anales receptivas no protegidas con parejas casuales (RARNP). La PrEP fue muy aceptable en esta muestra de las TGW en el nordeste de Brasil. Sin embargo, las TGW con mayor riesgo de infección por VIH, que generalmente tienen RARNP, estaban menos dispuestas a usar PrEP.

Palabras clave VIH · Profilaxis de Preexposición (PrEP) · Prevención · Personas transgénero · Rechazo

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Introduction

While the HIV prevalence rate in general population in Brazil is of 0.4%, the HIV epidemic in Brazil is concentrated among key populations that represent the majority of new cases, such as gay and other men who have sex with men (MSM), sex workers, drug users and the highest rates are noted among transgender women (TGW) [1]. To this point, a meta-analysis reported 33% prevalence among TGW in Brazil [2]; a study based in Rio de Janeiro, Brazil, reported 31.2% prevalence of HIV among 350 TGW [3].

For populations at high risk of HIV acquisition such as TGW, the World Health Organization recommends daily oral pre-exposure prophylaxis (PrEP) with emtricitabine/tenofovir disoproxil fumarate (FTC/TDF) [4]. PrEP has proven highly efficacious (99%) when individuals adhere to the daily medication regimen [5–9], and there are unique barriers to uptake and adherence among TGW such as concerns about potential interactions between PrEP with feminizing hormones and other gender-affirming healthcare practices, as well as medication costs [10]. The iPrEx trial carried out in six countries identified that TGW reported greater overall exposure to HIV and had lower PrEP adherence [11].

Brazil has been an early adopter of innovative HIV strategies through their *Sistema Único de Saúde* (SUS)—the national health system that provides universal health care with no payment fees [12]. Since 1996, Brazil has offered free and universal access to ARV for people living with HIV [13]. Brazil participated in the iPrEx trial [5] and subsequently carried out a PrEP demonstration study (*PrEP Brasil*) among MSM and TGW to evaluate the feasibility of PrEP delivery through the Brazilian SUS [14]. Brazil started to offer PrEP through SUS for populations at highest risk of HIV infection including TGW in December 2017 [15, 16] and it is available in public health clinics in all Brazilian's states free of charge [15].

For PrEP to achieve maximal population impact, it should be utilized by persons at highest risk for HIV acquisition, including transgender populations. Research has shown that knowledge and acceptability of a health policy are highly correlated with its access and utilization [17]. Although studies on PrEP acceptability have been published in other countries, and shown that PrEP acceptability is high [18–21], there remains a limited understanding of why some TGW report lack of interest in taking PrEP. We investigated PrEP among TGW and explored factors associated with PrEP refusal to inform the roll-out of PrEP across the Brazilian health system, and to provide lessons learns for future countries considering the inclusion of PrEP in their health systems.

Methods

Data for this research arose from the *PopTrans* study, a biological/behavioral surveillance survey (BBSS). Additional details on the study have been published elsewhere [22].

Data Collection

The eligibility criteria of this study were: self-identify as *travestis* or transsexual women; 15 years of age or older; and living, studying, or working in Salvador. In Brazil, the terms *travestis* and transsexual women are commonly used by members of the communities themselves to relay a range of non-binary gender identities. For the sake of comparison with the international literature, we are using the term transgender women hereafter. The study site was based in Salvador, in the northeast region of Brazil and the fourth most populous city in the country. It´s one of the poorest cities in the country and is mostly comprised of Afro-Brazilians descendants.

Study participants were recruited using Respondent Driven Sampling (RDS) recruitment. RDS data collection was initiated by selecting a number of initial participants (seeds) from the population of interest by the study team, and they are provided a fixed number of coupons to recruit others [23–25].

RDS is used when participants can act as better recruiters than researchers and when individuals in a population from social networks are connected to each other [26]. A sample size calculation of 200 TGW was based on STI prevalence estimation from other RDS studies in Brazil among key populations [27, 28] as there were not HIV prevalence studies among TGW in the northeastern region. However, after 1 year and half of field work we reached a sample size of 127 TGW. In RDS studies, sampling can be ended when the targeted community is saturated [24].

Data collection was described in detail elsewhere [22]. Briefly, during formative research 10 TGW (nominated seeds) living in Salvador, with relatively large social networks, diverse age range and socioeconomic makeup were chosen by the research team. Each eligible participant received three coupons to recruit TGW from their social network and received US$ 10.60 (R$30,00 in Brazilian Real) in food vouchers after completing the survey. Each participant also received a secondary incentive of the same amount for each recruited participant who completed the interviews. Coded coupons and coupon manager software were used to minimize duplications. Participant enrollment took place between September 2014 and April 2016 from Monday to Friday—1 pm to 5 pm—in a

safe space for TGW located in a central part of Salvador with easy access of public transportation.

Latent Class Analysis

Latent class analysis (LCA) is a useful method to identify underlying groups of individuals with similar response profiles. It is based on categorical non-observed (latent) variables, which are defined from a set of categorical observable variables, constituting a set of latent classes according to the response profiles obtained from the observed variables within a specific group [29, 30]. This method identify groups of individuals that share similar response profiles on classification variables, LCA provides information on how multiple variables interact with each other to predict response variables and allowed us to identify which kinds of demographic and social group profiles would be most likely to refuse or to accept PrEP [31].

To define the most appropriate latent class model, we analyzed three models with different numbers of classes and compared values from the Akaike Information Criteria (AIC) and Bayesian Information Criteria (BIC) (lower values to represent the best fit). The entropy also was used to summarize the uncertainty of a posteriori classification and provides an indication of discrimination of the classes defined by the model (the closer to 1 the better) [32]. Due to the poor performance of AIC and BIC when number of parameters is not small relative to sample size [33, 34], we also evaluated the LCA models using corrected BIC (cBIC), also referred by the software as sample-size adjusted BIC. The choice of model was based on the combination of statistical criteria, parsimony and interpretability [35]. Conditional independence assumption was evaluated through the bivariate residual analysis. LCA was performed using Mplus software version 5.21 [36].

Measures

Outcome Variable

LCA was used to identify patterns of PrEP acceptability. Before asking the participants about PrEP acceptability, we briefly explained PrEP in the following way: "PrEP is an HIV pre-exposure prophylaxis; meaning it is the use of a daily medication to prevent HIV. PrEP consists of taking 1 tablet of combined antiretroviral every day to decrease the risk of HIV infection." We then followed up with survey questions that included the following statements about PrEP: (1) I would refuse PrEP to prevent HIV; (2) I would not use PrEP even if it is available through the public health system; (3) I would not use PrEP if I have to pay for it; (4) I would refuse PrEP even if it is 100% effective; (5) Taking PrEP does not make me less concerned about getting HIV; (6) I would refuse PrEP if I have to take it daily; (7) I have never heard about PrEP before the study.

Control Variables

Socio-demographic covariates used in bivariate and multivariable analysis included: age (15–24 years old vs. 25–60 years old), civil status (married/has partner vs. single/separated/divorced/widowed), self-reported skin color (black and brown vs. white), monthly minimum wage equal to or greater than US$ 252.87 (R$900,00—the minimum wage of Brazilian real per month based on the exchange rate at the time of the analysis vs. lower US $252.87), years of schooling (equal to or less than 8 years vs. more than 8 years). Socio-behavioral factors included: ever used illicit drugs (cocaine, cannabis, crack, ecstasy, lysergic acid diethylamide (LSD), glue and injectable—yes vs. no); self-reported experience of discrimination (yes vs. no); current sex work (yes vs. no); ever tested for HIV (yes vs. no), and ever unprotected receptive anal intercourse (URAI) with casual partners (yes vs. no).

Data Analysis

The statistical analysis conducted in this study should be viewed as exploratory [37], to provide insights for research questions that can be validated by future studies. It is a challenge to sample hidden and vulnerable populations, and little is known about transgender women. Therefore, results from small studies such as ours are essential for adding knowledge on HIV prevention and roll out of PrEP among TGW.

In RDS studies, each participant does not have the same probability of being included in the recruitment: those with larger social networks have a greater likelihood of being sampled than those with smaller ones [24]. To take into account the differential selection probabilities RDS II estimator was used to produce weighted estimates for each variable of interest. The weights were derived from RDS Analyst software version 0.42 [38]. The questions that identified the size of social network were: "How many transgender women do you know by name and know you by name in Salvador?" and "Of the transgender women that you know, how many would you invite to participate in this research?"

The latent variable and the RDS weights were transferred to the database for descriptive, bivariate, and multivariable analyses using the complex analysis function in Stata™ version 12.1 (StataCorp, College Station, TX, USA). Bivariate analyses including the Chi square test were used to compare demographics and behaviors between low and high PrEP acceptability categories. Statistically significant variables at p value level ≤ 0.20 on Pearson Chi squared test were included in the multivariable analysis along with key variables highlighted in the literature. Adjusted odds ratios

(AOR) with 95% confidence intervals were estimated using multivariable logistic regression analyses to evaluate the effect of potential explanatory variables on PrEP acceptability [39]. There is no routine in STATA that allows the inclusion of RDS weighting with exact methods. We performed unweighted analyzes (with no RDS weights) for small samples and there were no significant changes (statistical significance) using Fisher's Exact tests for bivariate analysis and exact logistic regression for multivariable analysis. As the weighted analysis (required for RDS) can only be done with asymptotic methods and there were no significant differences between the asymptotic method and the exact methods without weighting, we kept the analysis with the weighted RDS estimator.

The *PopTrans* study was approved by the Ethics in Research Committee at the Bahia State Health Department (number 225,943/2014). A written informed consent was required of TGW to initial participation in the study.

Results

We recruited 127 TGW from ten seeds through eight waves of recruitment. Most of the participants were less than 25 years old (57%), self-identified as black or brown (72.2%) and reported completing less than 8 years of education (73.2%). More than half (53.9%) reported their monthly minimum wage above US$ 252.87 (R$ 900.00), single civil status (63.4%) and engaged in URAI with casual partners (20.2%). Most participants were sex workers (77.6%), had used illicit drug (64.4%) and were previously tested for HIV (78.9%). Finally, most participants reported experiences of discrimination (83.7%) (Table 1). When the participants were questioned if they had ever heard of PrEP to prevent HIV infection, about one-third (18.4%) answered yes. The model chosen to describe PrEP acceptability was one with two latent classes "PrEP refusal" and "high acceptability of PrEP" (entropy = 0.99, AIC = 623.10, BIC = 665.77, sample-size adjusted BIC (cBIC) = 618.3) (Table 2).

Class 1: PreP Refusal

TGW classified in Class 1 (8.7% of the sample population, n = 11) were most likely to refuse PrEP. Every single TGW in this class reported yes to the following: they would refuse PrEP to prevent HIV; would not use PrEP if have to pay; would refuse PrEP even if it is 100% effective; and taking PrEP does not make me less concerned about getting HIV. Further, most reported they would not use PrEP even if it is available through the public health system (75.6%); would refuse PrEP if have to take it daily (85%); and had never heard about PrEP before the study (71.7%) (Table 3).

Table 1 Socio-behavioral characteristics of transgender women. Salvador, Bahia, 2014–2016

Variables	n (127)	%	%[a]
Age			
≥ 25 years	60	47.2	43.0
< 25 years	67	52.8	57.0
Skin colour			
Black and brown	98	77.2	72.2
White	29	22.8	27.8
Years of schooling			
≤ 8 years	49	38.6	26.7
> 8 years	78	61.4	73.2
Income			
≥ US$ 252.87	76	59.8	53.9
< US$ 252.87	51	40.2	46.1
Partner status			
Single	92	72.4	63.4
Living with a partner	35	27.6	36.6
URAI with casual partners			
Yes	32	25.2	20.2
No	95	74.8	79.8
Sex work at time of study			
Yes	90	70.9	77.6
No	37	29.1	22.4
Use of illicit drugs			
Yes	65	51.2	64.4
No	62	48.8	35.6
Ever test for HIV			
Yes	90	70.8	78.9
No	37	29.1	21.1
Self-reported experience of discrimination			
Yes	101	79.5	83.7
No	26	20.5	16.3

[a]Weighted by RDSII

Table 2 Statistical criteria for choosing the latent class model

Number of classes	AIC	BIC	Sample-size adjusted BIC (cBIC)	Entropy
2 Classes	623.10	665.77	618.3	0.99
3 Classes	623.23	688.65	615.9	0.99
4 Classes	627.21	715.38	617.3	0.95

Class 2: High acceptability of PrEP

TGW included in Class 2 (91.3% of the sample population, n = 116), were least likely to refuse PrEP. In this class less than 10% of individuals reported they would refuse PrEP to prevent HIV (5.3%); they would not use PrEP even if it

Table 3 Estimated percentages for latent class analysis classification variables

Item	% Global	PrEP acceptability	
		Class 1 PrEP refusal (N = 11; 8.7%) %	Class 2 High acceptability (N = 116; 91.3%) %
I would refuse PrEP to prevent HIV	11.5	100.0	5.3
I would not use PrEP even if it is available through the public health system	9.4	75.6	3.4
I would not use PrEP if I have to pay for it	15.7	100.0	8.1
I would refuse PrEP even if it is 100% effective	24.4	100.0	17.5
Taking PrEP does not make me less concerned about getting HIV	22.0	100.0	15.0
I would refuse PrEP if I have to take it daily	9.5	85.0	2.6
I have never heard about PrEP before the study	81.9	71.7	82.8

is available through the public health system (3.4%); would not use PrEP if have to pay (8.1%); would refuse PrEP if have to take it daily (2.6%). This class had the lowest percent of participants who reported that would refuse PrEP if it is not 100% effective (17.5%); and taking PrEP does not make me less concerned about getting HIV (15.0%). And most reported they never heard about PrEP before the study (82.8%) (Table 3).

Characteristics of TGW reporting PrEP refusal included white TGW, age 25 or older, earned more than a monthly minimum wage (≥ US$ 252.87) and reporting ever URAI with causal partners (Table 4). In multivariable analysis, TGW reporting URAI with casual partners (aOR = 6.9; 95% CI 1.1–42.1) were more likely to refuse PrEP (Table 5). In sum, while older TGW, white TGW, and having higher income was associated with PrEP refusal the estimated odds ratios did not reach statistically significant levels. We therefore focus our subsequent discussion on the results of odds ratios with statistically significant findings (p-value ≤ 0.05) as they are most critical to inform future strategies to improve the acceptability of PrEP.

Discussion

Previous knowledge of PrEP among TGW in the sampled network was low (18.4%), but PrEP acceptability was quite high (91.3%), a timely finding in light of Brazil's new commitment to expanding access to PrEP through the Brazilian health system. This is among the first studies to investigate acceptability of PrEP among TGW in low and middle-income countries, and is the first in Northeast Brazil, one of the poorest region in the country and where TGW face many vulnerabilities including to HIV/AIDS.

Similar results of PrEP acceptability have been reported in studies conducted in the United States (US), Europe and Asia among TGW and MSM, showing that more than half of the participants accepted daily PrEP, even when knowledge was one-third or less [20, 21, 40–43]. The PrEP *Brasil* demonstration study carried out in two major and richest cities in Southeastern Brazil found high levels of PrEP awareness among TGW [14]. However, study participants who consistently participate in other studies often reflect a higher level of awareness compared to TGW who are not consistently engaged in research studies and therefore are likely to have less awareness of the most recent biomedical breakthroughs related to HIV. Furthermore, PrEP awareness in "real-world" settings in lower-income areas of Brazil may differ from awareness and outcomes associated with demonstration studies conducted in more affluent areas of the Southeast. Nevertheless, results from the PrEP *Brasil* study underscore the viability of PrEP programs in publicly funded clinics in resource-limited settings. Taken together, the findings from our study and other Brazilian PrEP studies suggest that expanding PrEP is indeed viable in Brazil, but that efforts are needed to raise awareness among key populations particularly outside of Southern Brazil.

PrEP Refusal

Our results suggest that social behavioral factors can influence refusal to PrEP as the items "I would refuse PrEP even if it is 100% effective" and "taking PrEP does not make me less concerned about getting HIV" was reported by all TGW classified as "PrEP refusal". These findings suggest that not only the effectiveness of a prevention measure is important but how the information of new HIV prevention tools is relayed to key populations is critical to ensuring their acceptability. Similar results were reported in others studies with TGW [44] and MSM [45] where lack of knowledge regarding efficacy was associated with refusal to PrEP. Therefore, it is essential to provide the information to TGW that PrEP effectiveness is very high in reducing

Table 4 Bivariate analysis of PrEP refusal among transgender women in Salvador according to socio-behavioral factors. Salvador, Bahia, 2014–2016

Variables	PrEP refusal		
	%	%[a]	p value[a,b]
Age			
≥25 years	11.7	6.6	
<25 years	5.9	2.1	0.17
Skin colour			
Black and brown	7.1	2.4	
White	13.8	8.4	0.12
Years of schooling			
≤8 years	8.2	4.6	
>8 years	8.9	3.8	0.84
Income			
≥US$ 252.87	9.2	6.2	
<US$ 252.87	7.8	1.5	0.04
Partner status			
Single	8.7	3.4	
Living with a partner	8.6	5.1	0.69
URAI with casual partners			
Yes	12.5	11.9	
No	7.4	2.0	0.02
Sex work at time of study			
Yes	7.8	4.2	
No	10.8	3.4	0.77
Use of illicit drugs			
Yes	9.2	4.7	
No	8.1	2.9	0.55
Ever tested for HIV			
Yes	11.1	4.5	
No	2.7	2.2	0.53
Self-reported experience of discrimination			
Yes	7.9	3.8	
No	11.5	5.3	0.69

[a]Weighted by RDSII

[b]Statistically significant variables at p-value level = 0.20

Table 5 Multivariable analyses of socio-behavioral factors associated with PrEP refusal among transgender women

Variables	Adjusted OR[a,b]	95% CI
Age		
≥25 years	1.9	(0.3–11.4)
<25 years	1	
Skin color		
White	3.8	(0.6–26.3)
Black and brown	1	
Income		
≥US$ 252.87	5.1	(0.9–26.6)
<US$ 252.87	1	
URAI with casual partners		
Yes	6.9	(1.1–42.1)
No	1	

Salvador, Bahia, 2014–2016

[a]Weighted by RDS

[b]AOR from the logistic regression model

HIV transmission if taken regularly, and that effectiveness depends on adherence [5, 6].

TGW classified as "PrEP refusal" reported a very high proportion of the item "I would refuse PrEP if I have to take it daily". Other studies with TGW and MSM found that a daily regimen may be considered a potential barrier to PrEP acceptability and uptake, and that quarterly injections of PrEP would be better to improve adherence [46, 47]. These results show the need to investigate the feasibility of offering other routes of PrEP administration on the recent Brazilian PrEP-SUS Program, especially quarterly injections, given that the need to take a daily pill may discourage an important part of the population for whom PrEP is recommended.

All TGW who were classified as "PrEP refusal" indicated that they would not use PrEP if they have to pay for it, suggesting that paying for PrEP out of pocket can be a barrier among TGW in Brazil. Other studies have shown that costs is a potential barrier to PrEP among TGW because of lack of financial resources [44], and that free access is a facilitator for PrEP use [48]. On the other hand, a study conducted in Vietnam reported that TGW were willing to pay for PrEP even with few financial resources [21], which may be related to the health care system in Vietnam as access to care free of charge is not easily available and they may be accustomed to paying for health care [49]. Brazil, although facing an economic crisis, has a strong publicly funded health system that provides universal health care for all with no payment fees, including for PrEP [12]. However, even with the medications being free of cost there are other costs associated with seeking out relevant biomedical HIV prevention tools. Some of these have been documented in the literature such as cost of transportation, cost of lost wages for having to attend a health care appointment [50–52].

Both TGW classified in "PrEP refusal" and "PrEP high acceptability" reported high proportions to the item "never heard about PrEP before the study" reflecting very little knowledge of PrEP before the study. Knowledge about PrEP is one factor associated with increased willingness to take PrEP in other middle- and low-income countries [50, 51]. Our results reinforces that educational sessions alone about PrEP will not always substantially encourage PrEP acceptability and uptake [9], and indicate that educational strategies to raise awareness may need to be more targeted to address specific barriers contributing to low levels of PrEP acceptability, such as doubts about PrEP's efficacy,

side effects, perceived HIV acquisition risk, and access to PrEP care services.

URAI with Casual Partners and PrEP Refusal

URAI was the only factor that was statistically significantly associated with PrEP refusal. TGW who reported URAI with casual partners were more likely to refusal to PrEP, similar to a study conducted in Vietnam, in which the TGW with indication for using PrEP who inconsistently used condoms were less interested in PrEP [21]. TGW who could benefit the most from PrEP may be the least likely to be interested in using it. Although many TGW are at higher risk of HIV, not all perceive themselves at risk, as they have other priorities such as the use of hormones and silicone for body modification. These data highlighted the great challenge of the Brazilian SUS to demand extra efforts in the implementation of PrEP to reach TGW at increased risk of HIV infection. Therefore, it is critical to develop more nuanced communication strategies that can frame HIV and other STI prevention as a core component of TGW gender affirming care as this may improve awareness of HIV risk as well as willingness to use HIV prevention methods in rolling out PrEP [52–54].

Brazil has a great opportunity to show that having a health system that is based as a principle of health as a citizen's right and the state's duty [12], can have a major impact on controlling the HIV epidemic by provide PrEP free of charge, especially among the most vulnerable populations. Furthermore, added benefits of PrEP are expected such as earlier linkage to HIV care, followed by treatment initiation leading to health benefits and decreased transmission [16].

Brazil's recent political and economic tightening of austerity measures greatly impacts funding for health services [55, 56]. Nevertheless, PrEP Programs have been expanded in publicly funded clinics in Brazil [15]. However, the growing wave of religious conservatism in Brazil, concretely illustrated by the election of conservative candidates in congress may also undermine implementation and scale of HIV prevention programs [57]. For example, conservative candidate has recently taken steps to exclude the LGBT community from explicit protection by the Human Rights Ministry [58]. Further, the recent election of Jair Bolsonaro (October of 2018), the rightwing extremist, as President of Brazil [59, 60] may affect HIV policy in the country, as well as Brazil's health system, which provides free health services irrespective of individuals' ability to pay.

Limitations of RDS recruitment have been well documented. Until better methods are available, RDS will continue to be used to provide parameter estimates of hard to reach populations in the HIV epidemic. We carried out in-depth formative research before the survey to ensure that data collection site creates a confidential space for TGW to incentivize enrollment, while also allowing for systematic coverage across the city of Salvador. Meaningful collaboration with communities proved essential to successful implementation of the study and allowed the research team to assess potential risks and harms to participants [25, 26].

The estimates in RDS studies are representative of the recruited social network of the participants in the study. Therefore, our estimates can not be extrapolated to the entire population of TGW from Salvador. Our study sample was small and there was limited power to detect statistical significant associations at a p value of 5%.

TGW may misclassify their responses to the questions of PrEP acceptability as it is hard for people to accurately know exactly what they would do hypothetically, especially when little was known about PrEP. Or they may show an interest in using an HIV prevention strategy to meet what is expected socially terms (social desirability bias). However, the interviewers were well trained to explain in detail what PrEP is to all TGW before asking about acceptability. We used several items from the questionnaire to construct LCA variables, which may improve classification of PrEP acceptability. Quantitative studies among TGW in Brazil are rare up to this moment and even though extrapolation of our data outside Salvador may not be possible, it certainly adds important information for PrEP roll out in Brazil.

Despite these limitations, there are also strengths worth noting. The use of latent class variable to create an indicator of PrEP acceptability using different items from the questionnaire. It is an exploratory [37] study that provide insights for research questions that can validated by future studies. Due to the known challenges to sample hidden populations, studies such as ours are essential for adding knowledge on HIV prevention and roll out of PrEP among transgender women.

Conclusion

Understanding who refuses PrEP will help inform PrEP implementation in Brazil, as well as identify groups who need interventions for PrEP uptake and retention in PrEP care. We identified that a group of TGW in the sampled network may need extra intervention to support uptake of PrEP, especially the TGW with risky sexual practices, who usually have unprotected receptive anal intercourse with causal partners and who least likely to be interested in using PrEP.

Given that PrEP was recently provided through Brazilian SUS, these results are promising and reported that low-acceptability of PrEP among TGW in Salvador was infrequent. To successfully roll out PrEP in the Brazilian health care system, it is important that programs focus and give more attention for TGW, and policies support them in

the context of vulnerabilities to which they are subject, and promote higher perception of the TGW regarding STI prevention as a core component of TGW gender affirming care. Structural conditions such as social class position and racism place TGW in contexts of great vulnerability to HIV, and the acknowledgment of structural dimensions is essential and propulsive for adopting preventive practices, such as the use of PrEP.

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