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Permalink

<https://escholarship.org/uc/item/03j1j97m>

Journal

Behavioral Medicine, 45(2)

ISSN

0896-4289

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Publication Date

2019-04-03

DOI

10.1080/08964289.2019.1585325

Peer reviewed



Published in final edited form as:

Behav Med. 2019 ; 45(2): 143–152. doi:10.1080/08964289.2019.1585325.

Medical Mistrust and PrEP Perceptions Among Transgender Women: A Cluster Analysis

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Abstract

Transgender (trans) women experience unique barriers in accessing preventative health services such as HIV preexposure prophylaxis (PrEP). These barriers may be exacerbated by past real or anticipated mistreatment in health care settings, but little is known about the relationship between medical mistrust and poor PrEP uptake and knowledge. Using a multistep approach, this study used a novel survey instrument administered to a pilot sample of 78 trans women. Item responses on a 0–10 scale were subjected to a TwoStep cluster analysis to explore how perceptions of PrEP and experiences with health care vary among trans women. Two distinct clusters (C1,C2) were defined on the basis of race (C1: 82% White, C2: 69% Black) and highest level of education completed (C1: 53% college or above, C2: 42% high school diploma or GED). Analyses suggest that varying levels of medical mistrust exist between clusters. Higher mean scores on medical mistrust items were reported in C1. A similar relationship was found on attitudes toward PrEP. Differences in intention to use PrEP and differences in past PrEP use were not significant; however, C2 members were more likely to have heard of PrEP from a doctor. Results suggest that levels of medical mistrust and PrEP perceptions vary among distinct subpopulations in this community, which may affect willingness to use PrEP. Interventions aimed at addressing unique perceptions in subpopulations could move trans women from intention to PrEP use.

Keywords

Transgender health; HIV prevention; medical mistrust; health communication

Introduction

Transgender (trans) women are considered a critical population for HIV prevention. While trans women are known to be a population at high risk for HIV, the tendency for research to

aggregate trans women and men who have sex with men (MSM) based on their presumed HIV risk behavior frequently obfuscates true estimates of HIV prevalence within the community.¹ Despite this, there is substantial evidence to indicate a high HIV seroprevalence among trans women living in the United States. A 2008 meta-analysis of 29 studies that included trans feminine participants used weighted means to estimate a 27.7% HIV prevalence rate.² A more recent study used local testing data from multiple sites across the United States, including San Francisco, CA, and Miami Beach, FL, and found an HIV prevalence rate of 12% among the 599 trans women with no known previous HIV positive test result.³ Overall, trans women are believed to be 49 times more likely to acquire HIV compared to other cisgender adults of reproductive age.⁴ The disparity is attributable to high levels of stigma and discrimination that generate circumstances that increase their risk for HIV acquisition, such as survival sex work, economic marginalization, homelessness, and poor access to health care.^{3,5-7} These intersect syndemically, meaning they often co-occur and are mutually reinforcing across all levels of influence—individual, interpersonal, community, and society.⁸⁻¹² Due to this increased risk, the World Health Organization has identified trans women as a high-priority population for the implementation and scale-up of PrEP-based HIV prevention strategies.^{13,14}

Preexposure prophylaxis (PrEP) refers to the use of antiviral drugs prior to HIV exposure to prevent infection. In July 2012, the US Food and Drug Administration approved the first daily medication for PrEP, marketed as Truvada, a combination of tenofovir disoproxil fumarate and emtricitabine.¹⁵ Following approval, demonstration projects were launched to assess feasibility, acceptability, access, and adherence, particularly within vulnerable and underresourced populations.¹⁶⁻¹⁸ In the first clinical trial (“iPrEx”), which included high-risk MSM and trans women, PrEP reduced the risk of HIV acquisition by 44% on an intention-to-treat basis.¹⁹ However, a subanalysis of the trans women in iPrEx found no effectiveness, likely due to low levels of uptake and adherence.²⁰ The only trans-specific PrEP demonstration projects known to the authors are currently being conducted in California, funded by the California HIV/AIDS Research Program.²¹ Barriers to PrEP uptake and adherence for trans women are not well understood, but limited qualitative data suggest that they experience unique, trans-specific issues,²² including prioritization of hormone therapy and transition-related medical care over HIV prevention, and real and perceived trans-related stigma and discrimination in health care settings. This has resulted in a population that is highly vulnerable to HIV and its negative health consequences, yet is less likely to benefit from PrEP due to multiple barriers.

As is evident in the practice of not disaggregating sexual and gender minorities, HIV prevention efforts have historically failed to consider the unique needs of transgender women, despite their disproportionate impact. PrEP efforts to date have repeated this pattern.¹ As PrEP scale-up continues, the dissemination of PrEP information has struggled to break through to many traditionally “hard-to-reach” target populations, such as trans women.^{23,24} Considerable effort is thus still needed to determine the population-specific barriers and facilitators of PrEP use that are significant to this population¹⁴ and to determine whether certain subpopulations of trans women have different perceptions of PrEP based on their past experiences or demographic characteristics. Unique structural and psychosocial barriers, such as medical mistrust and discrimination experienced in the context of accessing

health care, have particular relevance for many trans women and may negatively impact PrEP perceptions and use intention.^{25,26}

Due to both contemporary and historic instances of medical maltreatment on the basis of race, many intersectional investigations of medical mistrust among sexual and gender minorities have centered on the acute experiences of medical mistrust among Black and other non-White persons. Historic abuses affecting Black people, and Black men in particular, such as the US Public Health Service's study of untreated syphilis in Black males, are frequently associated with lineages of medical mistrust and avoidance of medical care within the Black community.^{27–29} Following this, the research to date on the influence that medical mistrust has on decision making with regard to HIV prevention and treatment has been largely focused on Black MSM.^{30–34} In their investigation of the psychosocial factors associated with willingness to use PrEP among Black MSM, Eaton et al.³² demonstrated that race-based medical mistrust remained a significant predictor of PrEP use while controlling for other relevant factors such as age, education, and insurance status in multivariable models. In a comparative analysis of Black and White MSM residing in Jackson, MS, and Boston, MA, respectively, Cahill et al.³³ noted greater levels of medical mistrust among Black MSM participants relative to White MSM, particularly with regard to PrEP. Adding to these concerns are long-standing conspiracy beliefs about the origin of HIV, and global mistrust of the health care and pharmaceutical industries.^{28,31,35,36} But little research has been done to assess how medical mistrust may impact trans women's, or specifically trans women of color's, perceptions of or willingness to use PrEP.

Since there is no one universal definition of medical mistrust, what constitutes medical mistrust may vary between and within populations. Whereas research on racial differences in medical mistrust have attributed it to divergent cultural experiences of health care institutions among Blacks and Whites,³⁷ the experiences leading to mistrust among trans women are likely to differ as well. Trans women frequently report the experience or anticipation of mistreatment on the basis of gender, race, HIV status, and housing status, among other factors; this in turn has been shown to inhibit health care seeking and engagement.^{38,39} In response to this, there have been calls for global efforts to increase the availability of gender-affirming care to trans individuals.¹⁴ Gender-affirming care refers to a set of best practices that include provision of health care services such as hormone therapy, as well as the use of correct terminology and pronouns, providing facilities that are trans inclusive, and having health-related materials that are relevant to trans individuals.⁴⁰ The integration of PrEP services into a gender-affirming health care model is of key interest to these communities. However, it is unclear whether medical mistrust in trans women of color intersects with the mistrust they may have as trans women. This intersection is an important point that has not been addressed in the literature. Prior investigations have demonstrated that beliefs, knowledge, and awareness of medical interventions such as PrEP are necessary antecedents to successful uptake.^{41,42} Therefore, it is critical to evaluate how and to what extent medical mistrust presents a barrier to trans women's awareness and knowledge of PrEP as a conditional element toward PrEP use, and whether subpopulations of trans women, such as those who are also of a racial minority, experience more significant barriers that should be addressed in HIV prevention interventions. To this end, we sought to analyze differences among trans women utilizing a cluster analytic approach. Cluster analyses are

routinely used to identify unique typologies that may exist among demographically homogeneous groups. These typologies are frequently determined on the basis of psychographic characteristics (e.g., values, attitudes and opinions) that may not otherwise be apparent and have the potential to be highly consequential in tailoring health-related messages.⁴³

Methods

Study design

Data for these analyses are drawn from a multistep, mixed-methods pilot study on the barriers and facilitators of PrEP use among trans women. The first phase of the study involved collecting qualitative data via focus-group interviews with trans women, and individual interviews with medical providers and PrEP prescribers. From these interviews, a novel survey instrument was developed and administered to 78 trans women. Survey participants were recruited through a combination of active and passive means, with the majority taking part through chain recruitment. The trans women in this pilot sample were HIV negative or of unknown HIV status, and may therefore be potentially eligible for PrEP, at least 18 years of age, and from the Greater Philadelphia, PA, area. All surveys were either completed in person by the participants themselves or administered by a member of the research team. Surveys were done at trans-friendly support groups, community-based organizations, and a trans health conference open to the public. Participants gave verbal consent before being given the survey and were provided with a \$15 gift card upon completion of the survey. Temple University and the University of California, San Francisco institutional review boards independently reviewed and approved this study.

Measures

The survey developed for this study contains 75 Likert-scale items, in addition to categorical items ascertaining sociodemographic information and PrEP knowledge. Likert items were developed to reflect the several themes that emerged in the course of the qualitative interviews with trans women, health care providers, and PrEP prescribers. Items were formulated as a series of statements about PrEP (e.g., “PrEP is easy to take”), medical providers (e.g., “Doctors don’t want to treat people like me”) and attitudes about health care (e.g., “I am more assertive about my health care needs than most trans women”). The items selected for this analysis reflect themes that have been associated with medical mistrust among trans women, such as experiencing being misgendered by health care providers, perceived judgment from clinic staff, and discomfort discussing sex with health care providers.^{34,44–46} A full list of items differentiated by theme is provided in Appendix 1. Participants were asked to assign a value from 0 to 10 according to what extent they agree or disagree with each statement (0 = *strongly disagree*, 10 = *strongly agree*). Sociodemographic characteristics assessed categorically include gender identity, race/ethnicity, highest level of education completed, all-source income in the past 30 days, whether participants ever exchanged sex for money, food, housing, or drugs (*yes/no*), whether participants had been homeless or in a shelter in the past 6 months (*yes/no*), whether participants are currently insured (*yes/no*), and perceived personal level of HIV risk (“*I think my chances of getting infected with HIV are:*” 1. Zero, 2. Almost zero, 3. Small, 4. Moderate, 5. Large, 6. Very

Large). Categorical items to ascertain gender identity and race/ethnicity were made nonexclusive, allowing participants to identify multiple gender and race categories as they apply. Knowledge of PrEP was ascertained through the use of seven true-or-false questions about PrEP. A knowledge score was computed as a sum of all correct item responses (range 0–7). Willingness to use PrEP was assessed via a single item based on a revised version of the Ottawa Choice Predisposition/Decision Scale⁴⁷ at the conclusion of the survey, “*If your doctor asked you right now to decide about using PrEP, how do you think you would answer?*,” with responses ranging from 0 (*definitely do not want to use PrEP*) to 10 (*Definitely want to use PrEP*). Additionally, participants were asked if they had taken PrEP in the past (“*Have you ever used PrEP before?*”; *yes/no*).

Analytic plan

To determine potential differences by subpopulation in medical mistrust, medical mistreatment, PrEP perceptions, and other factors of interest, individual survey items were entered alongside key demographics into a TwoStep cluster analysis (SPSS version 25.0).^{48,49} The TwoStep cluster analysis allows for automatic selection of the optimal number of clusters by determining the natural groupings of a number of independent categorical and/or continuous variables. Once a cluster solution is determined, mean differences in continuous items are compared across clusters. The TwoStep cluster analysis also indicates which variables were of greatest input or predictor importance in defining each cluster. Because TwoStep cluster models are based on complete case analyses, clusters only contain cases with no missing data.⁵⁰ A primary advantage to cluster analyses over more conventional statistical tests of group difference is the ability to identify population subgroups or segments on the basis of distinct psychographics while potentially being demographically homogeneous.⁵¹ Once these clusters were defined, individual *t*-tests were conducted to determine mean differences in responses to scale items.

Results

Sample characteristics

Two distinct clusters emerged in the analysis. Table 1 depicts the sociodemographic characteristics for the entire sample, as well as by cluster. Differences in demographic characteristics by cluster are noted. A majority (69%, *n* = 18) of trans women in Cluster 1 reported their race as African American/Black, compared to 12% (*n* = 2) of Cluster 2 ($\chi^2[1, 43] = 13.64, p < 0.001$). Differences were also noted by education level, where 53% of trans women in Cluster 2 reported completing a college education or above (*n* = 9), while the majority of women in Cluster 1 reported high school, GED, or vocational school as their highest educational attainment (77%, *n* = 20) ($\chi^2[3, 43] = 9.80, p = .02$). Women in Cluster 1 were also more likely to have exchanged sex for drugs, money, or food ($\chi^2[1, 43] = 7.95, p = 0.01$) and more likely to have been unstably housed or homeless in the past 6 months ($\chi^2[1, 43] = 5.64, p = 0.02$).

Differences in health care and PrEP perceptions by cluster

Table 2 depicts mean differences in continuous items assessing health care experiences, medical mistrust, PrEP concerns and beliefs, and intent to use PrEP. Table 2 also includes

chi-squared results for two PrEP-related categorical outcomes: “Have you heard about PrEP from a doctor or health care provider?” (yes/no) and “Have you ever used PrEP? (yes/no).” In general, greater anticipation of negative health care experiences was indicated among Cluster 2, where members were majority White and had higher educational attainment (e.g., “I am afraid I would feel judged by the doctor and other people who work in a doctor’s office,” $M = 3.5$, $SD = 3.5$ vs. $M = 0.7$, $SD = 2.2$; $t(39) = 3.2$, $p < .003$). Conversely, Cluster 1 members, who are majority Black with lower educational attainment, indicated a greater comfort within health care settings and more positive experiences with doctors (e.g., “I feel my doctor accepts and supports me completely,” $M = 3.5$, $SD = 3.5$ vs. $M = 0.7$, $SD = 2.2$; $t(39) = 3.2$, $p = .003$, and “I know where to get PrEP in a gender affirming environment,” $M = 9.2$, $SD = 2.2$ vs. $M = 5.4$, $SD = 3.9$; $t(39) = 3.9$, $p < .001$). Cluster 2 also indicated more concern about health care discrimination and mistreatment on the basis of gender identity (“My doctor has referred to me as a man,” $M = 4.3$, $SD = 3.7$ vs. $M = 1.3$, $SD = 3.0$ $t(39) = 2.82$, $p = .007$), HIV stigma (“I worry that other doctors or health care providers will think I’m HIV positive if I’m taking PrEP,” $M = 2.6$, $SD = 2.6$ vs. $M = 0.6$, $SD = 1.9$ $t(39) = 3.2$, $p = .003$), sexual stigma (“I don’t want to talk with my doctor about my sex life,” $M = 3.9$ $SD = 3.3$, vs. $M = 1.0$, $SD = 3.0$ $t(39) = 3.3$, $p = .002$), and PrEP mistrust (“PrEP sounds ‘too good to be true,’ ” $M = 3.7$, $SD = 2.2$ vs. $M = 1.9$, $SD = 3.0$ $t(39) = 2.1$, $p = .05$). While clusters did not vary significantly in terms of intent to use PrEP or PrEP knowledge, there was a significant difference in whether participants in either cluster had heard about PrEP from a doctor ($\chi^2[2, n = 43] = 13.36$, $p < .001$). To facilitate the comparison between clusters, mean item responses were plotted to visualize perceptual differences (Figure 1).

Discussion

Results from this exploratory analysis suggest that unique typologies exist within trans women communities on the basis of sociodemographic characteristics, as well as attitudes related to trust in health care and concerns about discrimination. Within the clusters that emerged, distinct patterns were observed that link together negative health care experiences, fear or mistrust of doctors, various forms of stigma, and discrimination victimization on the basis of gender identity and HIV status. The mechanisms through which these victimization experiences affect engagement in health care are well understood and supported in the extant literature.^{46,52} In this population, the confluence of negative experiences that might produce medical mistrust also appears inversely related to whether individuals report knowing where to receive PrEP in a gender-affirming environment. On this basis alone, we might conclude that trans women who have access to health care settings that are gender-affirming may experience less medical mistrust, and this is to be expected.

This study is significant, however, in also diverging from what is expected. Based on the corpus of literature that has identified significant associations between medical mistrust and race, it would be reasonable to hypothesize that trans women of color would be more likely to report medical mistrust and discrimination. However, we found that greater PrEP concern and medical mistrust was instead observed among mostly White women with greater educational attainment (Cluster 2). Also, while the pilot sample was likely to be too small to capture differences in intention and actual use of PrEP, we did see trends indicating that those with less distrust (Cluster 1) were more likely to report being willing to use PrEP, or

had already tried it. They were also significantly more likely to report having heard about PrEP from a health care provider. Current studies indicate the opposite—that trans women are frustrated that they have not heard about PrEP from health care workers.⁵³ By delineating by cluster, this study seems to indicate that participating trans women of color were actually more likely to have heard PrEP messages that had been delivered in gender-affirming, trans-competent health care settings, of which there are notable instances in Philadelphia. This is an important finding.

As a whole, the participants in this study represent a relatively PrEP-naive sample, with only 8% currently using PrEP and less than 20% reporting ever having used PrEP. This is despite relatively high interest in PrEP and knowledge of PrEP, as measured in the entire sample as well as in each cluster. This suggests that continued barriers to PrEP use are likely to exist in both clusters. The fact that the trans women comprising Cluster 1, who reported more structural vulnerabilities such as housing insecurity and engaging in sex work, indicated more positive health care experiences suggests that efforts to increase access to gender-affirming care for this subpopulation within the trans community are succeeding to some extent. Conversely, among the trans women comprising Cluster 2, health care concerns and mistrust appear to have a stronger negative valence. It could also be that they do not feel at high risk of HIV and do not feel PrEP is needed. Sixty-five percent of those in Cluster 2 said they thought they had “zero” or “almost zero” risk of contracting HIV (compared to 43% in Cluster 1). It’s hard to know if these trans women are truly at low risk of HIV, or if not receiving health care in a trans-competent environment lowers their perceived risk because they haven’t heard about PrEP from a health care professional they trust. This should be further studied.

It is probable that unmeasured tertiary factors are also defining these two clusters, such as where these trans women receive their medical care. It is assumed that members of Cluster 1, because of economic barriers and lack of private health insurance, most likely get health care from a handful of nonprofit or community-based organizations in Philadelphia that treat trans women with greater regularity and are more accustomed to providing trans-competent care. Members of Cluster 2, on the other hand, may be more likely to use more traditional health care settings that may not work with trans women regularly, and where trans-specific needs are not known or not incorporated into practice. This at least raises the possibility that any policies and programs that have been implemented to reduce medical mistrust and expand gender-affirming care to the women in Cluster 1 could be adapted and replicated to the benefit of the women in Cluster 2. Similarly, while efforts to reduce medical mistrust and increase the availability of affirming care may be effective within the subpopulation represented in Cluster 1, there remain significant structural barriers to getting PrEP that have not been as effectively addressed, and these are potentially more consequential in decision making around PrEP for these women.

It remains true that providing gender-affirming care is critical for transgender communities and that care must address social, psychological, medical, and legal needs.⁷ Lack of gender-affirming care has been shown to adversely affect health care utilization, delaying both preventative and needed care in transgender patients.^{52,54} This is directly related to counseling on and provision of PrEP. Without addressing medical mistrust in the health care

setting, trans women may not be hearing about PrEP and making informed decisions about whether its use is right for them. This study indicates that it is also important to think about the environment in which care is provided, meaning that messaging and interventions may need to be targeted to the specific needs of the population. Many interventions target groups thought to be culturally “homogeneous,” but most groups—such as trans women—are quite heterogeneous in their attitudes, behavior, and beliefs. Importantly, this study shows that deconstructing a group and looking at variations in perceptions by clusters reveal important differences in PrEP beliefs as they relate to medical mistrust. These results could be used to more effectively target interventions specifically to the needs of a group that may be most likely to experience medical mistrust and provide a more nuanced look at how understanding and acceptance of PrEP are entwined in the larger issue of providing gender-affirming health care.

Before drawing final conclusions, important study limitations should be noted. First, this study presents findings from a pilot sample of trans women recruited from a single geographic area. The extent to which the results presented in this analysis are generalizable to the larger population of trans women may be limited as a result. Second, due to the methodological constraints of TwoStep cluster analysis, the results presented here only include complete cases. This resulted in a further reduction to sample size, which compounds the previously noted limitation; thus, we reiterate that further research is clearly needed. A missing value analysis was conducted that revealed no discernable pattern to the missing-ness of data. The decision to use a TwoStep approach was based on the exploratory nature of this study. Because TwoStep clustering is determined automatically according to likelihood distance measures and does not require a priori specification of the number of clusters, it was deemed appropriate for this exploratory aim.^{48,49} Finally, because this study relied on survey data that were self-reported, there is the potential that item responses were affected by social desirability bias, particularly with regard to self-reported interest in using PrEP.

Conclusions

Understanding the barriers and facilitators that are associated with access to health care and medical treatment such as PrEP is of vital importance to transgender women. In addition to demonstrating how medical mistrust may function as one of these barriers, the results from this study also support the notion that trans women are not a monolith, and that attitudes and perceptions toward health care and prevention strategies like PrEP are not homogeneous within the population. For women who are interested in PrEP and for whom PrEP is indicated, taking into account how levels of medical mistrust vary within unique subpopulations will help inform strategies for targeting and effectively promoting it to them.

Funding

Research reported in this publication was supported by the National Institute of Mental Health of the National Institutes of Health under award number [1R21MH110340-01A1].

Appendix

Appendix 1.

Survey items, by question theme

Theme 1: Health care confidence

I don't get what I need from my doctor because I am not assertive enough

I am more assertive about my health care needs than most trans women

If my doctor prescribes something I don't understand or agree with, I question it

If my doctor prescribes something I don't understand or agree with, I am likely not to take it

I don't always do what my doctor or health care worker asks me to do

Theme 2: Health care experiences

I don't want to talk with my doctor about my sex life

I am afraid I would feel judged by the doctor and other people who work in a doctor's office (like front desk staff) so I don't want to go and ask for PrEP

Doctors don't want to treat people like me

My doctor always explains things in a way I can understand

I feel my doctor accepts and supports me completely

I have had positive interactions with the staff at my doctor's office or clinic (like nurses, aides, front desk staff)

I'm comfortable talking with my doctor

I am more likely to take my doctor's advice if I feel they do not judge me

I feel my doctor listens to me and does not rush me

My doctor or other health care provider has misgendered me

My provider has referred to me as a man

I would prefer to get PrEP from the same doctor who gives me my hormones

I know where to get PrEP in a gender affirming environment

I worry that other doctors or health care providers will think I'm HIV positive if I'm taking PrEP

Theme 3: PrEP beliefs

If I use PrEP, my sex partner(s) might think I will give them HIV

I don't trust how effective they say PrEP is

I feel healthy so I don't need to take PrEP

I don't think PrEP really works

People from my race/ethnicity are more likely to need to take PrEP

PrEP sounds "too good to be true"

I'm worried I won't take PrEP correctly and then I will get HIV

I have a lot more important worries in my life than getting HIV

PrEP makes people think they are invincible (like they can't get HIV or other STIs)

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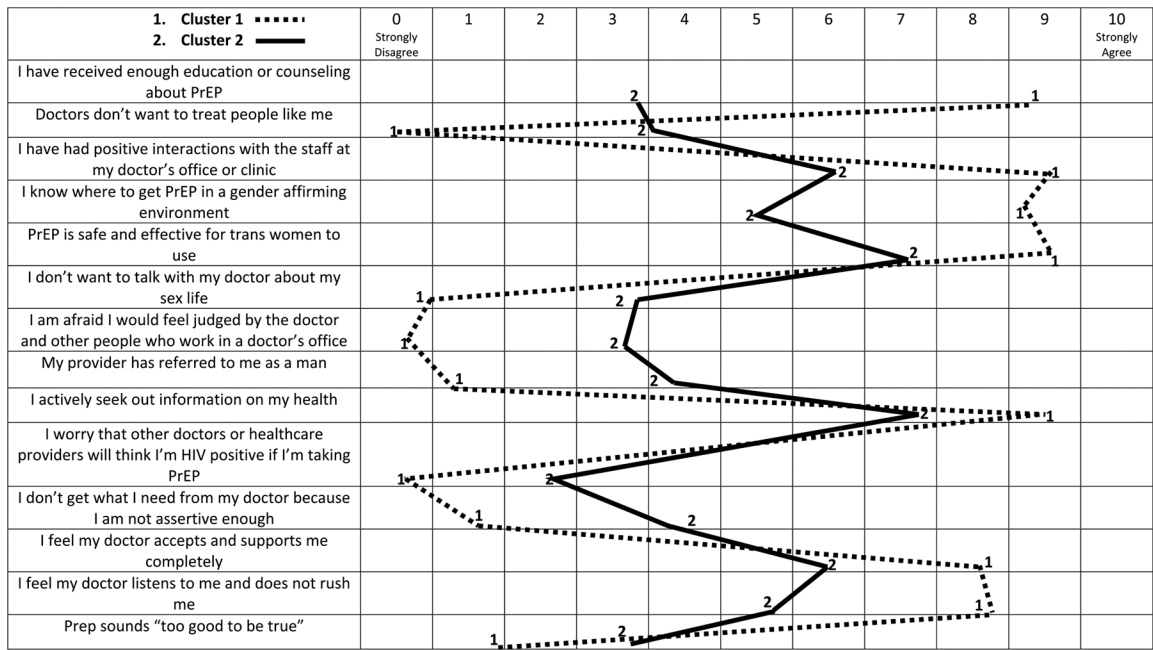


Figure 1.
Means plotted by cluster.

Table 1.

Demographic and other characteristics of total sample (n = 78) and by cluster.

Sociodemographic characteristics	Total (n = 78) % (n)	Cluster 1 (n = 26) % (n)	Cluster 2 (n = 17) % (n)	χ^2
<i>Gender identity</i>				
Female	23 (18)	19 (5)	41 (7)	
Male	3 (2)	0 (0)	6 (1)	
Transgender female	72 (56)	77 (20)	60 (10)	
Transgender male	5 (4)	4 (1)	6 (1)	
Genderqueer/GNB ^a	14 (11)	5 (2)	16 (7)	
Missing or other	3 (2)	-	-	
<i>Race/Ethnicity</i>				
African American/Black	41 (32)	69 (18)***	11 (2)***	13.64
Hispanic/Latinx	5 (4)	5 (2)	6 (1)	
White	42 (33)	15 (4)***	82 (14)***	18.94
API/multiracial/other	15 (12)	11 (3)	6 (1)	
<i>Education (highest level completed)</i>				
Less than high school	9 (7)	11 (3)*	0 (0)*	9.80
High school/GED/technical or vocational school	37 (29)	77 (20)*	47 (8)*	
Some college	26 (20)	35 (9)*	18 (3)*	
College graduate or above	24 (19)	12 (3)*	53 (9)*	
Missing	4 (3)	-	-	
<i>All-source income (past 30 days)</i>				
\$0-500	28 (22)	24 (6)	33 (5)	
\$501-1,000	18 (14)	32 (8)	6 (1)	
\$1,001-2,000	15 (12)	16 (4)	18 (3)	
\$2,001-3,000	12 (9)	16 (4)	18 (3)	
\$3,001-4,000	5 (4)	12 (3)	0 (0)	
\$4,000 and above	8 (6)	0 (0)	18 (3)	
Don't know/decline to answer	14 (11)	3 (1)	11 (2)	
Other sample characteristics				

Sociodemographic characteristics	Total (n = 78) % (n)	Cluster 1 (n = 26) % (n)	Cluster 2 (n = 17) % (n)	χ^2
Homeless or in a shelter in past 30 days (yes)	62 (48)	54 (14) *	18 (3) *	5.63
Health insured (yes)	82 (64)	92 (24)	94 (16)	
Ever exchanged sex for money/food/drugs/etc. (yes)	44 (34)	73 (19) *	29 (5) *	7.95
<i>Perceived HIV risk</i>				
Zero	28 (22)	31 (8)	18 (3)	
Almost zero	18 (14)	12 (3)	47 (8)	
Small	17 (13)	19 (5)	18 (3)	
Moderate	19 (15)	19 (5)	5 (2)	
Large	5 (4)	8 (2)	6 (1)	
Very large	6 (5)	12 (3)	0 (0)	
Missing	6 (5)	-	-	

^a GNB = Gender nonbinary.

* p .05;

** p .01;

*** p .001.

Table 2.

Bivariate associations between cluster membership and medical mistrust.

Continuous items	Cluster 1 (n = 26) M (SD)	Cluster 2 (n = 17) M (SD)	t	P
Age (in years)	35.81 (10.93)	34.41 (14.95)	-0.35	0.725
I have received enough education or counseling about PrEP	9.35 (2.06)	4.53 (3.83)	5.4	<0.001
Doctors don't want to treat people like me	0.65 (1.81)	4.47 (3.28)	-4.4	<0.001
I have had positive interactions with the staff at my doctor's office or clinic	9.58 (1.79)	6.35 (2.94)	3.6	0.001
I know where to get PrEP in a gender affirming environment	9.00 (2.32)	5.41 (4.14)	3.5	0.003
PrEP is safe and effective for trans women to use	9.77 (0.65)	7.59 (2.75)	3.0	0.008
I don't want to talk with my doctor about my sex life	1.31 (2.89)	4.18 (3.48)	-3.3	0.002
I am afraid I would feel judged by the doctor and other people who work in a doctor's office	0.77 (2.82)	3.53 (3.49)	-3.2	0.003
My provider has referred to me as a man	1.42 (2.99)	4.28 (3.69)	-2.8	0.007
I actively seek out information on my health	9.54 (1.14)	8.29 (2.49)	2.4	0.032
I worry that other doctors or health care providers will think I'm HIV positive if I'm taking PrEP	0.62 (1.89)	2.59 (2.78)	-2.8	0.009
I don't get what I need from my doctor because I am not assertive enough	1.58 (3.15)	4.76 (3.07)	-2.5	0.030
I feel my doctor accepts and supports me completely	8.81 (3.15)	6.06 (3.09)	2.4	0.007
I feel my doctor listens to me and does not rush me	8.92 (2.77)	5.94 (3.30)	3.3	0.002
PrEP sounds "too good to be true"	3.60 (2.19)	1.92 (2.97)	2.1	0.048
Intent to use PrEP	7.41 (3.39)	6.75 (2.88)	0.63	0.543
PrEP Knowledge	6.47 (1.45)	6.46 (0.94)	0.02	0.982
Categorical PrEP items	Cluster 1 % (n)	Cluster 2 % (n)	χ^2	P
Have you heard about PrEP from a doctor or health care provider? (yes)	77 (24)	23 (7)	13.4	<0.001
Have you ever used PrEP? (yes)	35 (9)	18 (2)	2.8	0.091