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Minority adolescents' HIV PrEP awareness and preferences in Alabama

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Abstract

Objective In the southern United States, adolescents are at elevated risk for HIV acquisition. In Alabama, school-based sexual health and HIV prevention education is strictly regulated and does not address the unique needs of sexual and gender minority (SGM) teenagers. To inform public health efforts, we assessed SGM adolescents' HIV prevention pre-exposure prophylaxis (PrEP) awareness and modality preferences by gender, race, and ethnicity.

Results Survey data were collected in 2023–2024 from SGM adolescents aged 14–17 years, lived in Alabama, with male sex assigned at birth ($N=206$). Recruitment occurred online and in-person at a charter school. Data were analyzed using chi-squares and analysis of variance, controlling for age. Over half of respondents were sexually active, but only 26% had ever been tested for HIV. Half knew about PrEP. Of those with PrEP awareness, 41.9% were aware of daily pills; 32.3% of long-acting injectable PrEP. Pill-based PrEP was highly endorsed. Trans- and gender-non-conforming adolescents reported a greater preference for on-demand pill-based PrEP compared to men who have sex with men ($p=.01$). Non-Hispanics had a greater preference for a 6-month long-acting injectable option compared to Hispanic adolescents ($p=.04$). Findings suggest the need for HIV prevention interventions tailored to southern contexts and adolescent knowledge.

Trial registration Not Applicable.

Keywords HIV prevention, Adolescents, Teenagers, Sexual and gender minority, Alabama, Pre-exposure prophylaxis, PrEP

Introduction

About 1.2 million people in the United States have HIV, with over 30,000 new diagnoses annually; 82% of new HIV diagnoses were among individuals who reported their sex assigned at birth (sex) as male, and approaching 20% were in youth and emerging adults aged 13–24 years [1]. While overall rates of HIV have been decreasing in the United States, new diagnoses have been increasing among sexual and gender minority (SGM) youth, including individuals who identify as men who have sex with men (MSM), transgender women, bisexual, queer, gender non-confirming (GNC), or gender-fluid [2]. SGM youth are at disproportionate risk for HIV acquisition due to a confluence of factors, including being in a developmental period marked by exploration, risk-taking, and ambivalence towards healthcare engagement [3]. Further, SGM adolescents in the southern United States experience intersectional stigmas related to sexual orientation, gender, HIV risk, race, and other co-occurring identities

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that may act as barriers to HIV prevention, including pre-exposure prophylaxis (PrEP) [4].

In 2019, after PrEP's safety was established among adolescent MSM, the United States Food and Drug Administration (FDA) approved PrEP for individuals weighing at least 77 lbs. In the past five years, notable strides have been made to increase PrEP options, which now include FDA-approved once-daily pills, on-demand PrEP, and FDA-approved long-acting injectable cabotegravir [5, 6]. Yet, PrEP coverage remains low, with only 20% of 16–24 year olds with indicated need being prescribed PrEP [1, 7]. The rate of PrEP prescribing is the lowest among young SGMs compared to all other age groups. A high public health priority is the Ending the HIV Epidemic (EHE) goal to increase PrEP coverage to 50% of all individuals with indications of need; [1] however, to accomplish this goal in adolescents, we must first learn about this population's understanding of PrEP and preferences.

The Adolescent Medicine Trials Network for HIV/AIDS Interventions and HIV Prevention Trials Network have supported studies that assess PrEP preferences among SGM young adults; [8–10]one study found that daily oral PrEP were highly preferred even above modalities in development [9]. In contrast, a study in South Africa with you found that HIV prevention injections were preferred over implants; preferences varied by gender, with young women preferring prevention care at a health clinic and disliked accessing HIV prevention at pharmacies [11]. Since HIV prevention and PrEP choices vary across contexts, and this is little information on youth in the southern United States, there continues to be a need to examine PrEP preferences of SGM adolescents in this region, where stigma is high and resources are limited [12, 13].

Stigma refers to the process by which a group of individuals is labeled as socially undesirable and devalued due to attributes or behaviors that are societally deemed as "deeply discrediting." [14] Intersectional stigma characterizes the convergence of multiple stigmatized identities, which is often examined to address their joint effects on health behaviors, including HIV prevention [15]. Young SGM may experience intersectional stigma related to their age, gender, orientation, socioeconomic status, race, and ethnicity, and this intersectional stigma may be exacerbated in culturally conservative settings, such as the southern United States [16], leading to reduced care engagement and increasing the likelihood of HIV acquisition [17]. Considering the EHE goal to increase PrEP prescribing to adolescents and emerging adults, and that the southern United States is a high-stigma setting that may reduce prevention care engagement, we conducted a community-engaged PrEP preferences study with SGM adolescents in Alabama.

Main text

Methods

Inclusion criteria for the Alabama Youth Survey was aged 14–17 years, resident of Alabama, sex assigned at birth of male, sexual preference for males, and ability to provide informed assent [18]. Potential respondents who did not meet these inclusion criteria were excluded. Recruitment occurred in-person at the Magic City Acceptance Academy [19], a charter school, Magic City Acceptance Center, and online via social media with extensive data integrity verification (e.g., random audits, SMS verification, etc.). All study materials, procedures, and informed consent processes were reviewed and approved by the University of Alabama at Birmingham Institutional Review Board (IRB-300009255) and the Florida State University Institutional Review Board (STUDY00003480). Since this study was conducted with minors aged 14–17 years, we engaged in a multiple-step process: (1) parents or legal guardians were informed of the study and provided information so they could opt out their child from participating. Our IRBs approved a waiver of parental consent; thus, written informed consent was not obtained from parents or guardians, due to the minimal risk presented by this study. Then, (2) written, via our digital interface, informed assent was collected from all study participants before data collection via secure Qualtrics link.

PrEP awareness was assessed by measuring familiarity and exposure such as "Have you ever heard of PrEP?" PrEP modality awareness was assessed by the question "Which type of PrEP, if any, have you heard of?," asked of respondents indicating PrEP awareness. PrEP preferences were assessed through a series of questions asking the likelihood of acceptance of modalities. Items were rated on a 5-point scale ranging from 1 = Extremely Unlikely to 5 = Extremely Likely. Respondents were informed that some options were FDA-approved, in development, or hypothetical.

Data were analyzed via chi-squared test for categorical variables and analysis of variance for continuous variables by gender, race, and ethnicity, adjusting for age SPSS (Version 29).

Results

We enrolled 206 eligible SGM adolescents, 14–17 years old. Mean age was 16.21 years (standard deviation = 0.88); 23.1% identified as transgender or gender-non-conforming (GNC). 30% were African American or Black; 12.1% were Hispanic or Latinx; 53.4% had been sexually active in the past six months, but only 26.7% had ever accepted HIV testing. Only half of respondents were aware of PrEP; 28.6% had seen a PrEP commercial on television and 37.9% on social media. Of those with PrEP awareness ($n = 103$), 41.9% knew about daily pills, 18.7% about on-demand or 2-1-1 PrEP, and 32.3% about long-acting

injectable PrEP. There were no significant differences in PrEP awareness by gender, race, or ethnicity. See Table 1.

Among all respondents, pill-based PrEP was highly endorsed via mean score (M), with the highest level of support for the hypothetical modality of a once-a-month pill (M = 4.03). Rectal douche and suppository options were deemed as least acceptable (M = 2.47 for both). Although there was strong concurrency in preferences between most groups, transgender and GNC adolescents had a greater preference for on-demand pill-based PrEP as compared to MSM (M = 4.38 vs. M = 3.87, p = .01) and non-Hispanic respondents expressed a greater preference for an every-6-month injectable option (lenacapavir in currently in clinical trials for effectiveness of this dosing frequency) as compared to Hispanic respondents (M = 3.69 vs. M = 3.17, p = .04). See Table 2 for comparative statics.

Discussion

Our findings highlight awareness gaps among SGM with male sex assigned at birth and sexual preference for males, including MSM, transgender individuals, and GNC adolescents. Only half of the respondents knew about PrEP, which was surprising since over half were sexually active, and many were recruited from agencies that are leading HIV prevention efforts in the state. This said, a similar level of PrEP knowledge was noted in a sample of 15–17 year olds from a 2018 study [20], suggesting stagnation in growth and the need for investing in efforts to improve knowledge, often a precursor to behavior change. Because PrEP awareness is a precursor to PrEP knowledge, which is necessary for PrEP uptake, there is a continued need for HIV prevention efforts to introduce PrEP to SGM adolescents, particularly at younger ages. When presented with PrEP modalities, there was a preference for oral pills, which was also indicated in an earlier study conducted with South African youth [11]. While injectables, suppositories, and douches may be acceptable to older populations, adolescents tend to have less exposure to these treatment modalities and, due to familiarity with pills, may prefer oral pills to what they perceive to be more physically invasive options.

Table 1 PrEP knowledge by race, gender, and ethnicity

	Race				Gender				Ethnicity			
	Total (*N* = 183)	**White (*N* = 120)**	**Black (*N* = 63)**		**Total (*N* = 206)**	**Male (*N* = 165)**	**Trans + GNC (*N* = 41)**		**Total (*N* = 192)**	**Non-Hispanic (*N* = 167)**	**Hispanic (*N* = 25)**	
Variables	**N(%)**	**N(%)**	**N(%)**	**p**	**N**	**N(%)**	**N(%)**	**p**	**N**	**N(%)**	**N(%)**	**p**
Have you ever heard of PrEP?				0.868				0.914				0.924
Yes	94(51.4)	61(64.9)	33(35.1)		103(50)	81(78.6)	22(21.4)		94(49)	82(87.2)	12(12.8)	
No	78(42.6)	52(66.7)	26(33.3)		90(43.7)	73(81.1)	17(18.9)		85(44.3)	73(85.9)	12(14.1)	
Have you ever seen a television commercial for PrEP?				0.446				0.513				0.502
Yes	57(31.1)	34(59.6)	23(40.4)		59(28.6)	50(84.7)	9(15.3)		54(28.1)	49(90.7)	5(9.3)	
No	116(63.4)	80(69)	36(31)		135(65.5)	105(77.8)	30(22.2)		126(65.6)	107(84.9)	19(15.1)	
Have you ever seen a social media advertisement for PrEP?				0.298				0.909				0.574
Yes	76(41.5)	45(59.2)	31(40.8)		78(37.9)	61(78.2)	17(21.8)		73(38)	66(90.4)	7(9.6)	
No	96(52.5)	68(70.8)	28(29.2)		115(55.8)	93(80.9)	22(19.1)		106(55.2)	89(84)	17(16)	
Which type of PrEP, if any, have you heard of?*#				-								
Daily pills	60(41.4)	37(61.7)	23(38.3)		65(41.9)	49(75.4)	16(24.6)	-	61(41.5)	54(88.5)	7(11.5)	-
PrEP 2-1-1	27(18.6)	16(59.3)	11(40.7)		29(18.7)	25(86.2)	4(13.8)		27(34)	24(88.9)	3(11.1)	
Injectable PrEP	48(33.1)	30(62.5)	18(37.5)		50(32.3)	38(76)	12(24)		50(18.4)	47(94)	3(6)	
None of the Above	10(6.9)	9(90)	1(10)		11(7.1)	9(81.8)	2(18.2)		9(6.1)	7(77.8)	2(22.2)	
Which of the following brands of PrEP, if any, have you heard of?*#				-								
Truvada	50(38.5)	26(52)	24(48)		53(38.1)	42(79.2)	11(20.8)	-	49(37.4)	43(87.8)	6(12.2)	-
Descovy	29(22.3)	13(44.8)	16(55.2)		30(21.6)	26(86.7)	4(13.3)		29(22.1)	24(82.8)	5(17.2)	
Apretude	20(15.4)	13(65)	7(35)		21(15.1)	17(81)	4(19)		20(15.3)	17(85)	3(15)	
None of the Above	31(23.8)	28(90.3)	3(9.7)		35(25.2)	25(71.4)	10(28.6)		33(25.2)	29(87.9)	4(12.1)	

Table 2 PrEP preferences by gender, race, and ethnicity

Variables	Gender				Race				Ethnicity			
	Total (*N* = 206)	Male (*N* = 165)	Trans + GNC* (*N* = 41)	p	Total (*N* = 183)	White (*N* = 120)	Black (*N* = 63)	p	Total (*N* = 192)	Non-Hispanic (*N* = 167)	Hispanic (*N* = 25)	p
	M(SD)				M(SD)				M(SD)			
How likely are you to take a PrEP that is a/an? ^												
Oral pill that you have to take every day?	3.42(1.29)	3.33(1.29)	3.77(1.22)	0.07	3.47(1.26)	3.52(1.25)	3.37(1.30)	0.46	3.45(1.28)	3.47(1.28)	3.30(1.32)	0.58
Oral pill that you have to take as needed?	3.97(1.13)	3.87(1.18)	4.38(0.78)	**0.01**	4.03(1.08)	4.05(1.05)	3.98(1.15)	0.67	4.01(1.10)	4.07(1.08)	3.60(1.19)	0.06
Oral pill that you have to take weekly?	3.80(1.14)	3.71(1.19)	4.12(0.83)	0.06	3.82(1.10)	3.89(1.05)	3.68(1.20)	0.22	3.81(1.12)	3.82(1.12)	3.69(1.18)	0.64
Oral pill that you have to take monthly?	4.03(1.13)	3.99(1.16)	4.18(1.02)	0.31	4.07(1.04)	4.08(1.06)	4.07(1.03)	0.96	4.07(1.11)	4.12(1.05)	3.69(1.42)	0.08
Patch that would stick to your skin (sticker) that would be changed weekly?	2.92(1.32)	2.91(1.35)	2.97(1.23)	0.76	2.94(1.28)	2.95(1.22)	2.94(1.39)	0.98	2.89(1.33)	2.91(1.32)	2.80(1.40)	0.73
Patch that would stick to your skin (sticker) that would be changed monthly?	3.07(1.36)	3.05(1.38)	3.14(1.29)	0.64	3.09(1.31)	3.11(1.25)	3.05(1.44)	0.81	3.05(1.37)	3.09(1.36)	2.76(1.44)	0.29
Rectal douche that you would give to yourself as needed?	2.47(1.39)	2.45(1.38)	2.51(1.41)	0.89	2.49(1.35)	2.43(1.30)	2.62(1.47)	0.42	2.46(1.39)	2.51(1.42)	2.09(1.13)	0.20
Shot / Injection that would be given in a clinic once a month?	3.12(1.32)	3.15(1.34)	3.03(1.24)	0.91	3.12(1.29)	3.07(1.30)	3.24(1.30)	0.36	3.12(1.32)	3.13(1.33)	3.04(1.22)	0.65
Shot / Injection that would be given in a clinic once every two months?	3.30(1.33)	3.37(1.34)	3.03(1.26)	0.29	3.31(1.28)	3.24(1.32)	3.48(1.20)	0.20	3.32(1.33)	3.35(1.32)	3.13(1.42)	0.35
Shot / Injection that would be given in a clinic once every six months?	3.61(1.26)	3.69(1.25)	3.34(1.25)	0.26	3.66(1.18)	3.63(1.18)	3.74(1.20)	0.52	3.63(1.26)	3.69(1.23)	3.17(1.43)	**0.04**
Suppository or pellet that you could insert into your rectum yourself?	2.47(1.37)	2.55(1.38)	2.16(1.28)	0.13	2.50(1.36)	2.42(1.31)	2.68(1.45)	0.23	2.46(1.37)	2.51(1.38)	2.13(1.20)	0.22

^ *Range of responses is from 1–5 with higher numbers indicating higher likelihood.* * *Trans + GNC = Transgender and Gender Non-Conforming. Covariate (1): Age.*

Limitations

Limitations include data being collected in one state, limiting generalizability. Since adolescence is a time of exploration and fluidity, gender identification may shift. Reasons for preferences were not collected. Even so, data from exclusively adolescent samples are somewhat rare, related to the complexities of recruiting pediatric populations, making this study uniquely valuable to HIV prevention efforts.

Conclusion

Findings suggest that HIV prevention efforts for SGM adolescents should introduce pill-based PrEP, which may be more acceptable due to being less invasive and more familiar at younger ages, considering that about half our sample was already sexually active at the time they took the survey. To reduce rates of new HIV infections among SGM adolescents in the southern United States, concentrated efforts must be made to engage adolescents earlier, develop novel intervention strategies for the dissemination of tailored sexual health education, and introduce modalities of PrEP that are acceptable to adolescents.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s13104-025-07273-5.

Supplementary Material 1

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Author contributions
HB was the Principal Investigator of the study and lead author. IY conducted all data analysis with the guidance and support of HLN. JB led data collection efforts with the support of CLB and AJ. All co-authors contributed to the writing, revisions, and editing of this manuscript.

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Data availability
No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate
All study materials and procedures were reviewed and approved by the University of Alabama at Birmingham (UAB) Institutional Review Board (IRB-300009255) and the Florida State University (FSU) Institutional Review Board (STUDY00003480). Informed assent was collected digitally from all study participants prior to data collection via secure Qualtrics link.

Competing interests
The authors declare no competing interests.

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