Centers for Disease Control and Prevention
MMWR
Morbidity and Mortality Weekly Report
Supplement / Vol. 73 / No. 1
January 25, 2024

National HIV Behavioral Surveillance Among Transgender Women — Seven Urban Areas, United States, 2019–2020

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

CONTENTS

CONTENTS (*Continued*)

The *MMWR* series of publications is published by the Office of Science, Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, Atlanta, GA 30329-4027.

Suggested citation: [Author names; first three, then et al., if more than six.] [Title]. MMWR Suppl 2024;73(Suppl-#):[inclusive page numbers].

Overview and Methodology of the National HIV Behavioral Surveillance Among Transgender Women — Seven Urban Areas, United States, 2019–2020

Dafna Kanny, PhD[1]; Kathryn Lee, MPH[1]; Evelyn Olansky, MPH[1,2,3]; Taylor Robbins, MPH[1]; Lindsay Trujillo, MPH[1,2,3,4]; Teresa Finlayson, PhD[1]; Elana Morris, MPH[1]; Christine Agnew-Brune, PhD[1]; Susan Cha, PhD[1]; Johanna Chapin-Bardales, PhD[1]; Cyprian Wejnert, PhD[1]; National HIV Behavioral Surveillance Among Transgender Women Study Group

[1]*Behavioral and Clinical Surveillance Branch, Division of HIV Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, CDC, Atlanta, Georgia;* [2]*ICF, Fairfax, Virginia;* [3]*Social & Scientific Systems, Inc., Atlanta, Georgia;* [4]*Oak Ridge Institute for Science and Education, Oak Ridge, Tennessee*

Abstract

Transgender women, especially transgender women of color, are disproportionately affected by HIV. However, no surveillance system collects data on HIV risk factors among this population. To address this gap, CDC developed a surveillance system entitled National HIV Behavioral Surveillance Among Transgender Women (NHBS-Trans) to assess behavioral and contextual data through systematic biobehavioral surveillance to monitor behavioral risk factors, prevention usage, and HIV prevalence among transgender women. NHBS-Trans used respondent-driven sampling in seven urban areas in the United States. Trained interviewers used a standardized, anonymous questionnaire to collect information on HIV-related behavioral risk factors, HIV testing, and use of prevention services. Each of the seven participating project areas recruited approximately 200 eligible transgender women and offered anonymous HIV testing. Overall, in the seven project areas, 1,757 participants completed the eligibility screener for NHBS-Trans during 2019–2020; of these, 6.6% were seeds (i.e., a limited number of initial participants who were chosen by referrals from persons and community-based organizations who knew or were part of the local population of transgender women). A total of 1,637 (93.2%) participants were eligible, consented, and completed the interview. Of these, 1,624 (99.2%) agreed to HIV testing. Of the total 1,637 participants, 29 participants did not report identity of woman or transgender woman, resulting in a final sample of 1,608 transgender women. NHBS-Trans project area staff members (n = 14) reported that the survey was timely and addressed a critical need for HIV surveillance in a population that is often overlooked. The *MMWR* supplement includes this overview report on NHBS-Trans, which describes the methods (history, participant eligibility criteria, questionnaire, data collection, and HIV testing) as well as evaluation of project implementation and the performance of the questionnaire content, specifically the acceptability for transgender women. The other NHBS-Trans reports in the supplement include information on pre-exposure prophylaxis use, psychosocial syndemic conditions and condomless anal intercourse, nonprescription hormone use, homelessness, discrimination and the association between employment discrimination and health care access and use, and social support and the association between certain types of violence and harassment (gender-based verbal and physical abuse or harassment, physical intimate partner abuse or harassment, and sexual violence) and suicidal ideation. NHBS-Trans provides important data related to the goals of the Ending the HIV Epidemic in the U.S. initiative. Findings from NHBS-Trans can help guide community leaders, clinicians, and public health officials in improving access to and use of HIV prevention and treatment services by transgender women.

Introduction

CDC's National HIV Behavioral Surveillance (NHBS) is a comprehensive system for biobehavioral surveillance (i.e., a surveillance activity that collects behavioral information through surveys and also collects biologic specimens for laboratory testing on disease status or biologic outcomes related to medication) that focuses on three core populations disproportionately affected by HIV: men who have sex with men, persons who inject drugs, and heterosexually active men and women at increased risk for HIV infection (*1*). Because HIV is disproportionally distributed among persons with low income, NHBS uses low income as a proxy for increased risk for acquiring HIV infection through heterosexual sex (*1*). However, CDC does not have a surveillance system that specifically focuses on HIV risk factors among transgender women, a group that is disproportionately affected by HIV, especially transgender women of color (*2*). Evidence suggests that in relation to their population size, transgender women are

Corresponding author: Dafna Kanny, Behavioral and Clinical Surveillance Branch, Division of HIV Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, CDC. Telephone: 770-488-5411; Email: dkk3@cdc.gov.

among the groups most affected by HIV in the United States (*2,3*). In 2017, CDC established the National HIV Behavioral Surveillance Among Transgender Women (NHBS-Trans) system. The goal was to conduct HIV-related biobehavioral surveillance to monitor behavioral risk factors, HIV testing behaviors, receipt of prevention services, use of prevention strategies, and HIV prevalence. The focus population was transgender women, defined as persons assigned male sex at birth but who identify as women or transgender women. Funding was awarded through the U.S. Department of Health and Human Services Secretary's Minority HIV/AIDS Fund, formerly the Secretary's Minority AIDS Initiative Fund, to focus on the recruitment of Black or African American and Hispanic or Latina transgender women (https://www.hiv.gov/federal-response/smaif/smaif-in-action). Two additional goals were to develop best practices for conducting biobehavioral surveillance with this population and to provide a platform for the funded health departments to work on community engagement.

CDC funded seven state and local health departments (hereafter referred to as project areas) to conduct NHBS-Trans in geographically diverse urban areas in the United States: Atlanta, Georgia (Georgia Department of Public Health), Los Angeles, California (Los Angeles County Department of Public Health); New Orleans, Louisiana (Louisiana Department of Health and Hospitals); New York City, New York (New York City Department of Health and Mental Hygiene); Philadelphia, Pennsylvania (Philadelphia Department of Public Health); San Francisco, California (San Francisco Department of Public Health); and Seattle, Washington (Washington State Department of Health).

This overview report describes NHBS-Trans 2019–2020 data and the system methods (history, participant eligibility criteria, questionnaire, data collection, and HIV testing) as well as evaluation of project implementation and the performance of the questionnaire content, specifically the acceptability for transgender women. The *MMWR* supplement also includes reports on pre-exposure prophylaxis use, psychosocial syndemic conditions and condomless anal intercourse, nonprescription hormone use, homelessness, discrimination and the association between employment discrimination and health care access and use, and social support and the association between certain types of violence and harassment (gender-based verbal and physical abuse or harassment, physical intimate partner abuse or harassment, and sexual violence) and suicidal ideation. Findings from NHBS-Trans can help guide community leaders, clinicians, and public health officials to improve access to and use of HIV prevention and treatment services by transgender women.

Methods

Overview

NHBS-Trans is an HIV-related biobehavioral surveillance system to monitor behavioral risk factors, prevention use, and HIV prevalence among transgender women. During 2019–2020, CDC conducted NHBS-Trans using respondent-driven sampling, a methodology similar to snowball sampling that is often used to sample hard-to-reach populations (*4*). This method relies on multiple waves of peer-to-peer recruitment to achieve the desired sample size. Applicable local institutional review boards in each participating project area approved NHBS-Trans activities. NHBS-Trans activities were described in the model surveillance protocol (https://www.cdc.gov/hiv/pdf/statistics/systems/nhbs/NHBS-Trans_Protocol.pdf). The final NHBS-Trans sample included 1,608 transgender women in seven urban areas in the United States (Atlanta, Georgia; Los Angeles, California; New Orleans, Louisiana; New York, New York; Philadelphia, Pennsylvania; San Francisco, California; and Seattle, Washington) recruited using respondent-driven sampling. This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable Federal law and CDC policy.*

Formative Assessment

NHBS-Trans implementation started with 18 months (January 2018–June 2019) of formative assessment (https://www.cdc.gov/hiv/pdf/statistics/systems/nhbs/NHBS-Trans_Formative_Assessment_Manual.pdf). Formative assessment methods included a review of existing data, reports, and publications; qualitative interviews with key partner organizations, including service providers and community key informants; and focus groups (*5*). Project areas often used formative assessments to answer key implementation questions (e.g., the appropriate incentive for participation and safe, conveniently located field site locations for data collection). Project areas also used the formative assessment period to build community support for NHBS-Trans. Project areas assembled local community advisory boards (CABs), and project area staff members included transgender and gender nonconforming persons.

Eligibility Criteria

NHBS-Trans included the following general eligibility criteria: aged ≥18 years, residence in a participating urban area,

*45 C.F.R. part 46.102(l)(2), 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.

no previous participation in NHBS-Trans during the current data collection, ability to complete the interview in English or Spanish, and ability to provide informed consent. Additional eligibility criteria included reporting specific combinations of responses to sex listed at birth and gender identity questions (i.e., listed male at birth and gender identity including woman, transgender woman, or a gender not listed here or listed intersex at birth and a gender identity of transgender woman) (Box).

Questionnaire

The NHBS-Trans questionnaire was developed with the following guiding principles: focus on domains relevant to the lives of transgender women, preserve key NHBS indicators for comparability with other populations, and ensure questionnaire items are respectful and appropriate for transgender women. During August 2015–January 2016, CDC conducted a literature review to identify survey tools that have been used in studies that included transgender persons. As a starting point for the literature review, a draft of a systematic review table and the search strategies used to identify the articles included in the evidence table were provided (*6*). CDC replicated these search strategies to identify any new articles that had been published since the original search was performed (i.e., January 1, 2008–November 30, 2015) or articles describing a study of transgender persons that might contain a survey instrument but might not have met the inclusion criteria used in that systematic review. CDC identified 170 relevant articles including all 116 of the articles listed in the evidence table and 54 articles that were not included in the evidence table. Full-length copies of the articles identified by CDC searches were obtained and examined to identify all survey instruments that were used in the study described in the systematic review. CDC obtained contact information for 82 unique corresponding authors and retrieved 24 survey instruments. To this group of surveys obtained from the literature review, CDC added three surveys obtained from researchers who were conducting transgender studies but had not yet published their findings. All survey items were entered into a Microsoft Access database to assist in review of the survey items. This database allowed organizing and searching 4,256 survey items by domain, construct, and source.

CDC assembled a CAB to provide consultation on questionnaire development. The CAB included nine members: eight were transgender women and one was a cisgender woman with extensive research and clinical experience working with transgender women. The majority (n = 5) of CAB members were either Asian, Black or African American, or Hispanic or Latina (Hispanic), although more members were White than any other race and ethnicity. (Persons of Hispanic origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.) CAB members were recruited from each of the four major regions of the continental United States (Midwest, Northeast, South, and West) to ensure geographic representation.

Many questionnaire items were selected or adapted from the standardized set of questions used to collect information among the core NHBS populations. In addition, new questionnaire sections (e.g., gender identity and medical gender affirmation) were added to tailor the questionnaire for use among transgender women. The order of questions was designed to minimize the cumulative emotional toll of potentially distressing questions about stigmatized behavior, experiences of discrimination, assault, and suicidality. Certain measures of sociodemographic characteristics and social determinants of health among transgender women are common to all topics of reports included in the *MMWR* supplement (Table 1).

Data Collection

During June 2019–February 2020, project areas collected biobehavioral and contextual data implementing recruitment and operational procedures (https://www.cdc.gov/hiv/pdf/statistics/systems/nhbs/NHBS-Trans_Operations_Manual.pdf). Recruitment started with a limited number of initial participants (i.e., seeds) who were referred by community-based organizations and persons from the local population of transgender women. Initial recruits who

BOX. Criteria used to identify a transgender woman — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas, United States, 2019–2020

	Gender identity				
Sex listed at birth	Woman	Man	Transgender woman	Transgender man	A gender not listed here
Male	Eligible	Not eligible	Eligible	Not eligible	Eligible
Female	Not eligible	Not eligible	Not eligible	Not eligible	Not eligible
Intersex	Not eligible	Not eligible	Eligible	Not eligible	Not eligible

TABLE 1. Variables, questions, analytic coding, and measures — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,* United States, 2019–2020

Variable	Question	Analytic coding	Measure
Age	What is your date of birth?	(MM/YYYY)	Age group
Race	Which racial group or groups do you consider yourself to be in? You may choose more than one option.	American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or other Pacific Islander, or White	Race and ethnicity[†]
Ethnicity	Do you consider yourself to be of Hispanic, Latina, or Spanish origin?	Yes or no	
Education	What is the highest level of education you completed?	Never attended school; grades 1–8; grades 9–11; grade 12 or GED; some college, associate degree, or technical degree; bachelor's degree; or any postgraduate studies	Education level
Household income, USD	What was your household income last year from all sources before taxes?	$0–$416 (M) or $0–$4,999 (Y), $417–$833 (M) or $5,000–$9,999 (Y), $834–$1,041 (M) or $10,000–$12,499 (Y), $1,042–$1,249 (M) or $12,500–$14,999 (Y), $1,250–$1,666 (M) or $15,000–$19,999 (Y), $1,667–$2,083 (M) or $20,000–$24,999 (Y), $2,084–$2,499 (M) or $25,000–$29,999 (Y), $2,500–$2,916 (M) or $30,000–$34,999 (Y), $2,917–$3,333 (M) or $35,000–$39,999 (Y), $3,334–$4,166 (M) or $40,000–$49,999 (Y), $4,167–$4,999 (M) or $50,000–$59,999 (Y), $5,000–$6,249 (M) or $60,000–$74,999 (Y), or ≥$6,250 (M) or ≥$75,000 (Y)	2019 poverty level[§]
	Including yourself, how many people depended on this income?	No. of dependents	
Disability	Are you deaf or do you have serious difficulty hearing? Are you blind or have serious difficulty seeing, even when wearing glasses? Because of a physical, mental, or emotional condition, do you have serious difficulty concentrating, remembering, or making decisions? Do you have serious difficulty walking or climbing stairs? Do you have difficulty dressing or bathing? Because of a physical, mental, or emotional condition, do you have difficulty doing errands alone, such as visiting a doctor's office or shopping?	Yes or no	Disability status[¶]
Health care access	Do you currently have health insurance or health care coverage?	Yes or no	Health insurance status
	What kind of health insurance or coverage do you currently have?	A private health plan — through an employer or purchased directly Medicaid — for people with low incomes, Medicare — for the elderly and people with disabilities, some other government plan, TRICARE/CHAMPUS, Veterans Administration coverage, or some other health insurance	Type of health insurance
	In the past 12 months, that is, since [fill with interview month, formatted as text] of last year, have you seen a doctor, nurse, or other health care provider?	Yes or no	Recent health care use
	Do you have a health care provider with whom you feel comfortable discussing gender-related health issues?	Yes or no	Transgender-specific health care access
	Does your current health insurance cover hormones for gender transition or affirmation?	Yes or no	Transgender-specific health insurance coverage
Homelessness	In the past 12 months, have you been homeless at any time? By homeless, I mean you were living on the street, in a shelter, in a single room occupancy hotel (SRO), or in a car.	Yes or no	Experienced homelessness
Incarceration	During the past 12 months, have you been held in a detention center, jail, or prison for >24 hours?	Yes or no	Incarceration

See table footnotes on the next page.

TABLE 1. (*Continued*) Variables, questions, analytic coding, and measures — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,* United States, 2019–2020

Variable	Question	Analytic coding	Measure
Exchange sex	In the past 12 months, have you received money or drugs in exchange for sex?	Yes or no	Exchange sex
Food insecurity	In the past 12 months, did you ever cut the size of your meals or skip meals because there wasn't enough money for food? In the past 12 months, did you ever not eat for a whole day because there wasn't enough money for food?	Yes or no	Food insecurity
Abuse and harassment	In the past 12 months, have you been verbally abused or harassed because of your gender identity or presentation?	Yes or no	Verbal abuse (gender-based violence)
	In the past 12 months, have you been physically abused or harassed because of your gender identity or presentation?	Yes or no	Physical abuse (gender-based violence)
	In the past 12 months, have you been physically abused or harassed by a sexual partner?	Yes or no	Physical intimate partner violence
	In the past 12 months, have you been forced to have sex when you did not want to? By forced, I mean physically forced or verbally threatened. By sex, I mean any sexual contact.	Yes or no	Forced sex (sexual violence)

Abbreviations: GED = General Educational Development; M = monthly; Y = yearly; USD = U.S. dollars.
* Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.
† Persons of Hispanic or Latina (Hispanic) origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.
§ 2019 Federal poverty level thresholds were calculated on the basis of U.S. Department of Health and Human Services Federal poverty level guidelines (https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/prior-hhs-poverty-guidelines-federal-register-references/2019-poverty-guidelines).
¶ To assess difficulty in six basic domains of functioning (hearing, vision, cognition, walking, self-care, and independent living), based on U.S. Department of Health and Human Services disability data standard (https://aspe.hhs.gov/reports/hhs-implementation-guidance-data-collection-standards-race-ethnicity-sex-primary-language-disability-0).

completed the eligibility screener and were eligible were interviewed, and those who completed the interview were asked to recruit up to five transgender women whom they knew personally. Those persons, in turn, completed the interview and were asked to recruit others using a system of coded coupons. Participants whose sex listed at birth was male and their gender identity included a gender not listed here but did not include woman or transgender woman could not recruit others. The recruitment process continued until the sample size was reached or data collection ended. Project area staff members conducted recruitment and data collection activities at established field sites (e.g., health department or community-based organization's offices) or in a mobile van parked in an established location at a field site.

Each of seven participating project areas planned to recruit approximately 200 eligible transgender women. Recruited and consented participants completed an interviewer-administered, standardized, in-person anonymous questionnaire using computer tablets. Key questionnaire components included demographics, sexual behaviors, alcohol use, injection and noninjection drug use, HIV testing experiences, health conditions, access to care and prevention activities, gender-affirming medical treatment, social support, experiences of abuse and harassment, and mental health, including suicidality. Each interview took an average of 40 minutes to complete (https://www.reginfo.gov/public/do/PRAViewICR?ref_nbr=201902-0920-007 and https://www.cdc.gov/hiv/pdf/statistics/systems/nhbs/NHBS-Trans_CRQ.pdf).

HIV Testing

NHBS-Trans offered all participants anonymous, blood-based rapid HIV testing. Participants who did not self-report a previous HIV diagnosis and had a first rapid test that was reactive received a second orthogonal rapid test (i.e., rapid-rapid testing algorithm) to confirm infection. Nonlaboratory staff members in project areas conducted HIV rapid tests in field settings under Clinical Laboratory Improvement Amendments waivers (https://www.cms.gov/regulations-and-guidance/legislation/clia/downloads/howobtaincertificateofwaiver.pdf). Participants received their HIV test results after completing the interview and were referred to treatment and other health and social services as needed. Participants who self-reported a previous HIV diagnosis, had at least one reactive HIV rapid test, or both, and consented to specimen storage, provided dried blood spot specimens for future laboratory testing (e.g., HIV viral load testing at CDC). Participants received incentive payments (e.g., a gift card) for the interview and HIV testing in person. Participant compensation for incomplete surveys could be offered in accordance with local policies. Incentives were given to those interviewed and tested for HIV (approximately $25 for each). Additional rewards (approximately $10) were paid to those who successfully recruited others. Local project areas determined the amount and type of incentives deemed appropriate for the local populations being interviewed and tested.

Qualitative Evaluation

During data collection, CDC conducted a surveillance system evaluation using semistructured qualitative interviews (i.e., interviews with a script of open-ended questions) with 14 key project area staff members across project areas to assess their experiences with staff member support, NHBS-Trans project development and implementation, and community engagement (Rushmore J, CDC, unpublished data, 2019). The interview guide is available (Supplementary Interview Guide, https://stacks.cdc.gov/view/cdc/137444). After data collection concluded, CDC conducted a questionnaire evaluation among project area interviewers to assess the general performance of questions, with a focus on acceptability of questionnaire items for transgender women.

Results

Overall in the seven project areas, 1,757 participants completed the eligibility screener for NHBS-Trans; of these, 6.6% were seeds (Table 2). Throughout data collection as part of the recruitment process, 5,642 coupons were distributed to participants to recruit their peers. A total of 1,637 (93.2%) participants were eligible, consented, and completed the interview. Of these, 1,624 (99.2%) agreed to HIV testing. Of the total 1,637 participants, 29 participants did not report identity of woman or transgender woman, resulting in a final sample of 1,608 transgender women.

All NHBS-Trans project area staff members who participated in the qualitative evaluation reported that the survey was timely and addressed a critical need for HIV surveillance in a population that is often overlooked. Although certain project areas reported recruiting a sample diverse in age, race and ethnicity, and socioeconomic status, others experienced challenges with recruiting key subgroups (e.g., younger women and Hispanic participants). In addition, certain project area staff members indicated concerns with acceptability of interview questions among transgender women. Differences in opinions to expand the recruiter eligibility criteria allowing gender nonconforming participants to recruit from their networks were observed by geographic region (e.g., East Coast versus West Coast). Staff members emphasized the importance of community support and relationships for ensuring the success of the surveillance system.

Interviewers in seven project areas collectively provided feedback on 117 questionnaire items. The majority (51%) of the feedback concerned the sections that were added specifically for transgender women populations (gender identity [21%] and medical gender affirmation [9%]) and the sex behavior section (21%), which was adapted from the core NHBS questionnaire. Major themes identified through interviewer feedback included interview flow, research mistrust, clarity of certain questions about pre-exposure prophylaxis adherence and homelessness, Spanish translation, transgender cultural competency, and the need for improvements in a trauma-informed approach to particularly sensitive questions (e.g., available referrals for crisis counseling for participants, managerial support for staff members experiencing secondary trauma, and disclaimers and introductions that explain the sensitive nature of the questions) (https://store.samhsa.gov/sites/default/files/sma14-4884.pdf). This feedback will be used to guide future iterations of the NHBS-Trans questionnaire.

Discussion

Approximately 1,600 eligible transgender women from seven project areas participated in the first NHBS-Trans during 2019–2020. Data from NHBS-Trans have reaffirmed that transgender women need to be a priority population in

TABLE 2. Number and percentage of screened participants, seeds,* distributed coupons, records, and HIV testing, by project area — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,† United States, 2019–2020

Project area	No. of screened participants	Participants who were seeds No. (%)	Distributed coupons No. (%)	Records§ No. (%)	Agreed to HIV testing¶ No. (%)	No. of transgender women in final sample
Atlanta, GA	164	15 (9.2)	650	136 (82.9)	134 (98.5)	132
Los Angeles, CA	523	6 (1.2)	1,464	505 (96.6)	504 (99.8)	504
New Orleans, LA	192	20 (10.4)	708	177 (92.2)	174 (98.3)	165
New York City, NY	303	10 (3.3)	930	281 (92.7)	278 (98.9)	279
Philadelphia, PA	223	12 (5.4)	597	220 (98.7)	218 (99.1)	220
San Francisco, CA	214	26 (12.2)	780	201 (93.9)	201 (100.0)	198
Seattle, WA	138	27 (19.6)	513	117 (84.8)	115 (98.3)	110
Total	**1,757**	**116 (6.6)**	**5,642**	**1,637 (93.2)**	**1,624** (99.2)	**1,608**

* A limited number of initial participants who were chosen by referrals from persons and community-based organizations who knew or were part of the local population of transgender women.
† Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.
§ Total number of records includes the number of records for participants who were eligible, consented to the survey, completed the interview, and for whom the interviewer was confident or somewhat confident in the responses to the interview questions.
¶ Among total number of records.

preventing HIV infection (*7*). The disproportionate effect of HIV infection among transgender women is the result of a complex layering of syndemics, and more remains to be understood (*8*). NHBS-Trans highlights the social and economic factors that are contributing to this disparity.

NHBS-Trans data have been used to provide behavioral and community context for trends in HIV infection diagnoses reported to CDC's National HIV Surveillance System (https://www.cdc.gov/hiv/statistics/surveillance/index.html). NHBS-Trans data also have described a population disproportionately affected by HIV and, thus, have provided indications of the leading edge of the epidemic. CDC, along with project areas, has been disseminating these data. Dissemination products have included the HIV Surveillance Special Report (*7*) and infographics (https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-special-report-number-27-infographic.pdf), presentations (https://www.cdc.gov/hiv/pdf/statistics/systems/nhbs/cdc-hiv-nhbs-transgender-women-surveillance-report-2019-2020.pdf), *MMWR* (*9*), and peer-reviewed journals (*10*–*13*).

Participants in NHBS-Trans were offered HIV testing and referral to care, if test results were positive. Providing HIV testing and the resources to connect to care enabled NHBS-Trans participants to know their status, seek treatment, or engage in future prevention strategies. Further, biologic information on HIV status via rapid-rapid testing algorithms can identify gaps in HIV screening and prevention efforts for transgender women.

A strong connection to the transgender communities in each project area was crucial for recruitment of participants and successful data collection. Project areas spent a year identifying and hiring staff members and learning about and engaging with their communities. They assembled local CABs and strengthened relations between transgender communities and their health departments. Buy-in from partner organizations was critical to the initiation and success of the project.

In every project area, transgender and gender nonconforming persons often comprised most front-line staff members and in many cases were in managerial roles. Including transgender and gender nonconforming persons as project area staff members was critical to connecting with local communities and, consequently, the success of NHBS-Trans. Further, in many cities, these staff members remained in permanent health department positions after the project ended and continued to serve as community liaisons and representatives of transgender women in their cities.

Throughout the preparation for NHBS-Trans, project areas explored various methods for sharing data, understanding the importance of returning findings back to the community. Efforts are ongoing to engage the community (i.e., local data analysis presentations tailored to the priorities of local transgender women partner organizations [https://www.youtube.com/watch?v=rPEBTXUXheA] and shared information with community members), ensuring that persons who provided these data are positioned to receive and benefit from it (https://www.nyc.gov/assets/doh/downloads/pdf/dires/hiv-transgender-women-factsheet.pdf).

Limitations

The findings in the supplement are subject to at least five limitations. First, NHBS-Trans data are not nationally representative and might not be generalizable to all U.S. urban areas, nonurban areas, or all transgender women. However, the hidden and hard-to-reach nature of this population prevents collection of nationally representative samples. Second, respondent-driven sampling has certain sources of bias. Groups that are more insular (i.e., more likely to recruit only within their own group) are more likely to be overrepresented (if recruitment chains become trapped inside the group) or underrepresented (if recruitment chains cannot access the group) in the sample than less insular groups (*14*). Groups with larger networks might be overrepresented in the sample because more recruitment paths lead to their members. Certain groups might be less willing or able to participate in the survey and would be underrepresented in the sample. This bias can be assessed and compensated for in multiple ways. Certain potential sources of bias were identified and addressed by NHBS-Trans project area staff members. For instance, project area staff members were encouraged to ensure that their initial peer recruits, or seeds, were diverse by race and ethnicity, age, geographic location, and other important factors that would have the effect of increasing the insularity of recruitment and of homophily (i.e., groups that recruit only within their own group). Project areas also implemented lessons learned during formative assessment to mitigate potential participation bias. For example, information from formative assessment was used to optimize location and setup of field sites so that all population members had safe, convenient access to participants (*15,16*). Third, biases in enrollment and agreement to HIV testing might result in over- or underestimation of HIV infection prevalence or incidence. If those who agree to be tested differ from those who decline, in terms of age, race and ethnicity, or sex, findings might be less generalizable. Fourth, because NHBS-Trans was a one-time cross-sectional survey, causality or directionality of the findings cannot be determined. Finally, the data are self-reported and are subject to recall and social desirability biases.

Conclusion

NHBS-Trans collected for the first time behavioral and contextual data through systematic biobehavioral surveillance of transgender women from seven participating project areas during 2019–2020. A strong connection to the transgender communities in each project area was crucial for recruitment of participants and successful data collection. NHBS-Trans findings highlighted in the *MMWR* supplement can help guide community leaders, clinicians, and public health officials' efforts in improving access to and use of HIV prevention and treatment services by transgender women.

National HIV Behavioral Surveillance Among Transgender Women Study Group

Narquis Barak, CrescentCare; Kathleen A. Brady, Philadelphia Department of Public Health; Sarah Braunstein, New York City Department of Health and Mental Hygiene; Jasmine Davis, CrescentCare; Sara Glick, University of Washington, School of Medicine, Division of Allergy and Infectious Diseases, Public Health – Seattle & King County, HIV/STD Program; Andrea Harrington, Philadelphia Department of Public Health; Jasmine Lopez, New York City Department of Health and Mental Hygiene; Yingbo Ma, Los Angeles County Department of Public Health; Aleks Martin, Public Health – Seattle & King County, HIV/STD Program; Genetha Mustaafaa, Georgia Department of Public Health; Tanner Nassau, Philadelphia Department of Public Health; Gia Olaes, Los Angeles County Department of Public Health; Jennifer Reuer, Washington State Department of Health; Alexis Rivera, New York City Department of Health and Mental Hygiene; William T. Robinson, Louisiana State University Health Science Center in New Orleans – School of Public Health, Louisiana Office of Public Health STD/HIV/Hepatitis Program; Ekow Kwa Sey, Los Angeles County Department of Public Health; Sofia Sicro, San Francisco Department of Public Health; Brittany Taylor, Georgia Department of Public Health; Dillon Trujillo, San Francisco Department of Public Health; Erin Wilson, San Francisco Department of Public Health; Pascale Wortley, Georgia Department of Public Health.

Conflicts of Interest

All authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. No conflicts of interest were disclosed.

References

1. Kanny D, Broz D, Finlayson T, Lee K, Sionean C, Wejnert C; NHBS Study Group. A key comprehensive system for biobehavioral surveillance of populations disproportionately affected by HIV (National HIV Behavioral Surveillance): cross-sectional survey study. JMIR Public Health Surveill 2022;8:e39053. PMID:36378503 https://doi.org/10.2196/39053
2. Herbst JH, Jacobs ED, Finlayson TJ, McKleroy VS, Neumann MS, Crepaz N; HIV/AIDS Prevention Research Synthesis Team. Estimating HIV prevalence and risk behaviors of transgender persons in the United States: a systematic review. AIDS Behav 2008;12:1–17. PMID:17694429 https://doi.org/10.1007/s10461-007-9299-3
3. Becasen JS, Denard CL, Mullins MM, Higa DH, Sipe TA. Estimating the prevalence of HIV and sexual behaviors among the US transgender population: a systematic review and meta-analysis, 2006–2017. Am J Public Health 2019;109:e1–8. PMID:30496000 https://doi.org/10.2105/AJPH.2018.304727
4. Heckathorn D. Respondent-driven sampling: a new approach to the study of hidden population. Soc Probl 1997;44:174–99. https://doi.org/10.2307/3096941
5. Allen DR, Finlayson T, Abdul-Quader A, Lansky A. The role of formative research in the National HIV Behavioral Surveillance System. Public Health Rep 2009;124:26–33. PMID:19413025 https://doi.org/10.1177/00333549091240S106
6. Reisner SL, Poteat T, Keatley J, et al. Global health burden and needs of transgender populations: a review. Lancet 2016;388:412–36. PMID:27323919 https://doi.org/10.1016/S0140-6736(16)00684-X
7. CDC. HIV infection, risk, prevention, and testing behaviors among transgender women—National HIV Behavioral Surveillance, 7 U.S. cities, 2019–2020. HIV Surveillance Special Report 27. Atlanta, GA: US Department of Health and Human Services, CDC; 2021. https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-special-report-number-27.pdf
8. Singer M, Bulled N, Ostrach B, Mendenhall E. Syndemics and the biosocial conception of health. Lancet 2017;389:941–50. PMID:28271845 https://doi.org/10.1016/S0140-6736(17)30003-X
9. Lee K, Trujillo L, Olansky E, et al.; National HIV Behavioral Surveillance among Transgender Women Study Group. Factors associated with use of HIV prevention and health care among transgender women—seven urban areas, 2019–2020. MMWR Morb Mortal Wkly Rep 2022;71:673–9. PMID:35588092 https://doi.org/10.15585/mmwr.mm7120a1
10. Hernandez CJ, Trujillo D, Sicro S, et al. High hepatitis C virus seropositivity, viremia, and associated risk factors among trans women living in San Francisco, California. PLoS One 2021;16:e0249219. PMID:33784365 https://doi.org/10.1371/journal.pone.0249219
11. Hernandez CJ, Trujillo D, Turner CM, et al. Reaching trans women in San Francisco for efforts to eliminate hepatitis C. J Viral Hepat 2021;28:1325–8. PMID:33894048 https://doi.org/10.1111/jvh.13521
12. Trujillo D, Arayasirikul S, Xie H, et al. Disparities in sexually transmitted infection testing and the need to strengthen comprehensive sexual health services for trans women. Transgend Health 2022;7:230–6. PMID:36643058 https://doi.org/10.1089/trgh.2020.0133
13. Wilson EC, Hernandez CJ, Scheer S, et al. Improved PrEP awareness and use among trans women in San Francisco, California. AIDS Behav 2022;26:596–603. PMID:34390435 https://doi.org/10.1007/s10461-021-03417-3
14. Heckathorn DD. Respondent-driven sampling II: deriving valid population estimates from chain-referral samples of hidden populations. Soc Probl 2002;49:11–34. https://doi.org/10.1525/sp.2002.49.1.11
15. Magnani R, Sabin K, Saidel T, Heckathorn D. Review of sampling hard-to-reach and hidden populations for HIV surveillance. AIDS 2005;19(Suppl 2):S67–72. PMID:15930843 https://doi.org/10.1097/01.aids.0000172879.20628.e1
16. McKnight C, Des Jarlais D, Bramson H, et al. Respondent-driven sampling in a study of drug users in New York City: notes from the field. J Urban Health 2006;83(Suppl):i54–9. PMID:16977493 https://doi.org/10.1007/s11524-006-9102-1

Characteristics Associated with Pre-Exposure Prophylaxis Discussion and Use Among Transgender Women Without HIV Infection — National HIV Behavioral Surveillance Among Transgender Women, Seven Urban Areas, United States, 2019–2020

Elana Morris, MPH[1]; Anna Teplinskaya[1,2]; Evelyn Olansky, MPH[1,2]; Jeffrey Kemp Rinderle, MS[3]; Johanna Chapin-Bardales, PhD[1]; National HIV Behavioral Surveillance Among Transgender Women Study Group

[1]*Behavioral and Clinical Surveillance Branch, Division of HIV Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, CDC, Atlanta, Georgia;* [2]*Social & Scientific Systems, Inc., Silver Spring, Maryland;* [3]*Prevention Communication Branch, Division of HIV Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, CDC, Atlanta, Georgia*

Abstract

CDC recommends pre-exposure prophylaxis (PrEP) for transgender women who have sex with men and who report sexual behaviors that place them at substantial ongoing risk for HIV exposure, including those who engage in nonsterile syringe sharing. Providing transgender women with access to PrEP is a critical strategy for reducing HIV acquisition and ending the HIV epidemic. Survey results from the National HIV Behavioral Surveillance Among Transgender Women were used to assess characteristics associated with past-year discussions of PrEP with a health care provider and PrEP use. Bivariate analyses were conducted to assess the association between covariates (sociodemographic, HIV-associated characteristics, and gender-affirming care) and each outcome, accounting for sampling design. All covariates that were statistically significant at $p<0.05$ in the bivariate analyses were included in multivariate models, and manual backward elimination was used to obtain final models that retained statistically significant covariates. Among 902 transgender women from seven urban areas in the United States without HIV infection in the analyses, 57% had recently discussed PrEP with a health care provider, and 32% recently had used PrEP. In the final multivariate model, the following subgroups of transgender women were more likely to report recent PrEP use: those who identified as Black or African American or Hispanic or Latina, had two or more sex partners in the past 12 months, had condomless sex in the past 12 months, reported their last sex partner was infected with HIV, had condomless sex with their last sex partner whose HIV status was positive or unknown, ever had transgender-specific health care, and currently had transgender-specific health insurance coverage. Participants who were less likely to have recently used PrEP were those who wanted to but were not currently taking hormones and those aged <40 years. Providing increased access to gender-affirming care and training health care providers who serve transgender women to incorporate PrEP into existing services might increase PrEP use among transgender women.

Introduction

Pre-exposure prophylaxis (PrEP) is highly effective at preventing HIV transmission when taken as prescribed (*1*) and is a critical strategy for the Ending the HIV Epidemic in the U.S. initiative (*2*). CDC recommends PrEP for transgender women who have sex with men and those who report sexual behaviors that place them at substantial ongoing risk for HIV exposure, including those who engage in nonsterile syringe sharing (*1*,*3*,*4*). Although many transgender women could benefit from PrEP, previous studies have identified barriers to PrEP use (e.g., poverty, lack of health insurance, homelessness, stigma, and discrimination), including discrimination within the health care system (*5*–*8*). Black or African American (Black) and Hispanic or Latina (Hispanic) transgender women who are among the groups most affected by HIV (*9*) also experience greater socioeconomic and structural barriers to PrEP use (*10*). (Persons of Hispanic origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.) In addition, qualitative studies of transgender women indicate that they might prioritize gender-affirming care over other health care because of its importance to their overall well-being (*6*,*11*). Previous studies have identified integrating gender-affirming care into HIV services as a strategy for increasing use of HIV services, including PrEP (*11*,*12*).

This report examines whether transgender women who report behaviors associated with HIV acquisition were more likely to have had discussions with their health care provider about PrEP and used PrEP. In addition, this report explores whether transgender women who had access to and used gender-affirming health care were more likely to have had

Corresponding author: Elana Morris, Division of HIV Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, CDC. Telephone: 404-718-8193; Email: efm9@cdc.gov.

discussions with their health care provider about PrEP and used PrEP. The findings in this report can help public health practitioners identify opportunities for increasing PrEP use among transgender women who might benefit from it.

Methods

Data Source

This report includes survey data from National HIV Behavioral Surveillance Among Transgender Women (NHBS-Trans) conducted by CDC during June 2019–February 2020 to assess behavioral risks, prevention usage, and HIV prevalence. Eligible participants completed an interviewer-administered questionnaire and were offered HIV testing. Definitions of demographics and social determinants of health are available in the overview and methodology report of this supplement (*13*). The NHBS-Trans protocol questionnaire and documentation are available at https://www.cdc.gov/hiv/statistics/systems/nhbs/methods-questionnaires.html#trans.

Applicable local institutional review boards in each participating project area approved NHBS-Trans activities. The final NHBS-Trans sample included 1,608 transgender women in seven urban areas in the United States (Atlanta, Georgia; Los Angeles, California; New Orleans, Louisiana; New York, New York; Philadelphia, Pennsylvania; San Francisco, California; and Seattle, Washington) using respondent-driven sampling. This analysis is limited to 902 participants with negative National HIV Behavioral Surveillance HIV test results. This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable federal law and CDC policy.*

Measures

Outcome measures were PrEP discussion with a health care provider during the past 12 months and PrEP use during the past 12 months. Participants who reported not being aware of PrEP were considered to not have discussed PrEP or used PrEP during the past 12 months (Table 1). Definitions of certain covariates are available in the overview and methodology report of this supplement (*13*) and included sociodemographic, HIV-associated, and gender-affirming care characteristics. Sociodemographic characteristics assessed included age group (18–29, 30–39, and >40 years), race and ethnicity (American Indian or Alaska Native, Asian, Black, Hispanic, Native Hawaiian or other Pacific Islander, White, or persons of multiple races [persons of Hispanic origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic]), education (less than high school, high school diploma or equivalent, some college or technical degree, and college degree or more), 2019 poverty level (at or below the Federal poverty level and above the Federal poverty level), and current health insurance.

Multiple sexual and injection HIV-associated characteristics also were assessed. Sexual behaviors included the number of sex partners during the past 12 months, anal or vaginal sex without a condom (hereafter referred to as condomless sex) during the past 12 months, last partner's HIV status, condomless sex with last partner whose HIV status was positive or unknown, and received money or drugs in exchange for sex (hereafter referred to as exchange sex) during the past 12 months. Injection-related behaviors assessed during the past 12 months included injected drugs, always used sterile needle to inject for gender affirmation, and nonsterile syringe sharing to inject drugs or for gender affirmation (hereafter referred to as nonsterile syringe sharing). Gender-affirming care characteristics assessed included feeling comfortable discussing gender-related concerns with a provider during the past 12 months (hereafter referred to as transgender-specific health care), transgender-specific health insurance coverage (coverage of hormones for gender transition or affirmation), and hormone use (currently taking, not currently taking but want to take, and not currently taking and do not want to take).

Analysis

This analysis was conducted in four steps using SAS software (version 9.4; SAS Institute). First, descriptive analyses were conducted to characterize the prevalence of sociodemographic, HIV-associated, and gender-affirming care characteristics, and the main PrEP outcomes among transgender women without HIV infection. Second, log-linked Poisson regression models with generalized estimating equations were used to assess the bivariate relations between each of the covariates and each outcome variable. Respondent-driven sampling method and network effects were accounted for in the models by clustering on recruitment chain and adjusting for urban area and network size to obtain adjusted prevalence ratios and 95% CIs. Third, two multivariate analyses were conducted, one for each PrEP outcome. Initially, all covariates with $p<0.05$ in the bivariate analysis were included in the full multivariate model for the respective outcome. Finally, manual backward elimination was used to create final models that retained statistically significant covariates ($p<0.05$). The multivariate models also included adjustment for urban area and network size and accounted for clustering by recruitment chain.

* 45 C.F.R. part 46, 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.

TABLE 1. Variables, questions, measures, and analytic coding for HIV-associated gender-affirming care and pre-exposure prophylaxis characteristics among transgender women without HIV infection — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,* United States, 2019–2020

Variable	Question	Measure	Analytic coding
HIV-associated characteristic			
Sexual behavior			
Sex past 12 months	In the past 12 months, have you had oral, vaginal, or anal sex?	Number of sex partners past 12 months	0–1, 2–4, 5–9, or ≥10
Number of sex partners past 12 months	In the past 12 months, how many oral, vaginal, or anal sex partners have you had?		
Sex past 12 months	In the past 12 months, have you had oral, vaginal, or anal sex?	Anal or vaginal sex without a condom past 12 months	Yes or no
Vaginal sex past 12 months	In the past 12 months, have you had vaginal sex? By vaginal sex, I mean penis in the vagina, neovagina, or front hole.		
Insertive vaginal sex past 12 months	In the past 12 months, have you had insertive vaginal sex? By insertive vaginal sex, I mean where you put your penis in your partner's vagina, neovagina, or front hole.		
Condomless insertive vaginal sex past 12 months	In the past 12 months, have you had insertive vaginal sex without a condom?		
Receptive vaginal sex past 12 months	In the past 12 months, have you had receptive vaginal sex? By receptive vaginal sex, I mean where your partner put their penis in your vagina, neovagina, or front hole.		
Condomless receptive vaginal sex past 12 months	In the past 12 months, have you had receptive vaginal sex without a condom?		
Anal sex past 12 months	In the past 12 months, have you had anal sex? By anal sex, I mean penis in the butt or back hole.		
Insertive anal sex past 12 months	In the past 12 months, have you had insertive anal sex? By insertive anal sex, I mean where you put your penis in your partner's butt or back hole.		
Condomless insertive anal sex past 12 months	In the past 12 months, have you had insertive anal sex without a condom?		
Receptive anal sex past 12 months	In the past 12 months, have you had receptive anal sex? By receptive anal sex, I mean where your partner put their penis in your butt or back hole.		
Condomless receptive anal sex past 12 months	In the past 12 months, have you had receptive anal sex without a condom?		
Know last partner's HIV status	The last time you had sex, did you know your last partner's HIV status?	Last partner's HIV status	HIV negative, HIV positive, or unknown
HIV status of last partner	What was your last partner's HIV status?		
Vaginal sex with last partner	In the past 12 months, did you have vaginal sex with your last partner? By vaginal sex, I mean penis in the vagina, neovagina, or front hole.	Condomless anal or vaginal sex with last partner whose HIV status was positive or unknown	Yes or no
Condomless vaginal sex with last partner	In the past 12 months, did you have vaginal sex with your last partner without a condom?		
Anal sex with last partner	In the past 12 months, did you have anal sex with your last partner? By anal sex, I mean penis in the butt or back hole.		
Condomless anal sex with last partner	In the past 12 months, did you have anal sex with your last partner without a condom?		
Know last partner's HIV status	The last time you had sex, did you know your last partner's HIV status?		
HIV status of last partner	What was your last partner's HIV status?		
Injection behavior			
Ever injected drugs	Have you ever in your life shot up or injected any drugs other than those prescribed for you? By shooting up, I mean anytime you might have used a needle to inject drugs in your veins, under the skin, or in the muscle.	Injected drugs past 12 months	Yes or no
When last injected drugs	Now, think about the last time you injected any drug. When was that — how many days or months or years ago did you last inject?		
Ever taken hormones	Have you ever taken hormones for gender transition or affirmation?	Always used sterile needle to inject for gender affirmation past 12 months	Yes or no
Currently taking hormones	Are you currently taking hormones for gender transition or affirmation?		
Types of hormones used past 12 months	In the past 12 months, what forms of hormones did you take? You can choose more than one answer.		
Frequency of use of sterile needle to inject hormones past 12 months	In the past 12 months, when you had a hormone shot, how often was a new, sterile needle used? By a new, sterile needle, I mean a needle never used before by anyone, even you.		
Ever injected other gender affirming substances (e.g., injecting silicone)	Have you ever injected substances other than hormones to change your body to match your gender identity?		
Injection of other gender affirming substances past 12 months	In the past 12 months, have you injected these substances?		
Frequency of use of sterile needle to inject other gender affirming substances past 12 months	In the past 12 months, when you had these other injections, how often was a new, sterile needle used? By a new, sterile needle, I mean a needle never used before by anyone, even you.		

See table footnotes on the next page.

TABLE 1. (*Continued*) Variables, questions, measures, and analytic coding for HIV-associated gender-affirming care and pre-exposure prophylaxis characteristics among transgender women without HIV infection — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,* United States, 2019–2020

Variable	Question	Measure	Analytic coding
Ever injected drugs	Have you ever in your life shot up or injected any drugs other than those prescribed for you? By shooting up, I mean anytime you might have used a needle to inject drugs in your veins, under the skin, or in the muscle.	Nonsterile syringe sharing in the past 12 months	Yes or no
When last injected drugs	Now, think about the last time you injected any drug. When was that — how many days or months or years ago did you last inject?		
Frequency of use of a sterile needle to inject drugs past 12 months	In the past 12 months when you injected, how often did you use a new, sterile needle? By a new, sterile needle, I mean a needle never used before by anyone, even you.		
Frequency of use of previously used needle to inject drugs past 12 months	In the past 12 months, how often did you use needles that someone else had already injected with?		
Ever taken hormones	Have you ever taken hormones for gender transition or affirmation?		
Currently taking hormones	Are you currently taking hormones for gender transition or affirmation?		
Types of hormones used past 12 months	In the past 12 months, what forms of hormones did you take? You can choose more than one answer.		
Frequency of use of sterile needle to inject hormones past 12 months	In the past 12 months, when you had a hormone shot, how often was a new, sterile needle used? By a new, sterile needle, I mean a needle never used before by anyone, even you.		
Ever injected other gender affirming substances (e.g., injecting silicone)	Have you ever injected substances other than hormones to change your body to match your gender identity?		
Injection of other gender affirming substances past 12 months	In the past 12 months, have you injected these substances?		
Frequency of use of sterile needle to inject other gender affirming substances past 12 months	In the past 12 months, when you had these other injections, how often was a new, sterile needle used? By a new, sterile needle, I mean a needle never used before by anyone, even you.		
Gender-affirming care characteristic			
Ever comfortable with provider	Have you ever had a health care provider with whom you felt comfortable discussing gender-related issues?	Transgender-specific health care	Yes or no
Ever taken hormones	Have you ever taken hormones for gender transition or affirmation?	Hormone use for gender affirmation	Yes or no
Currently taking hormones	Are you currently taking hormones for gender transition or affirmation?		
Want to take hormones	Would you like to take hormones for gender transition or affirmation?		
PrEP characteristic			
PrEP awareness	Pre-exposure prophylaxis, or PrEP, is an antiretroviral medicine, such as Truvada, taken for months or years by a person who is HIV-negative to reduce the risk of getting HIV. Before today, have you ever heard of PrEP?	PrEP awareness	Yes or no
PrEP awareness	Pre-exposure prophylaxis, or PrEP, is an antiretroviral medicine, such as Truvada, taken for months or years by a person who is HIV-negative to reduce the risk of getting HIV. Before today, have you ever heard of PrEP?	PrEP discussion with health care provider past 12 months	Yes or no
Visited health care provider past 12 months	In the past 12 months, have you seen a doctor, nurse, or other health care provider?		
Discussed PrEP with a health care provider past 12 months	In the past 12 months, have you had a discussion with a health care provider about taking PrEP?		
PrEP awareness	Pre-exposure prophylaxis, or PrEP, is an antiretroviral medicine, such as Truvada, taken for months or years by a person who is HIV-negative to reduce the risk of getting HIV. Before today, have you ever heard of PrEP?	PrEP use past 12 months	Yes or no
PrEP use past 12 months	In the past 12 months, have you taken PrEP to reduce the risk of getting HIV?		

Abbreviation: PrEP = pre-exposure prophylaxis.
* Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.

Results

During the past 12 months among 902 transgender women without HIV infection, 42.5% had five or more sex partners, 64.6% had condomless sex, and 34.1% received money or drugs in exchange for sex (Table 2). More than one-third (41.1%) reported that they did not know the HIV status of their last sex partner, 3.2% reported their last partner's HIV status was positive, and 14.5% had condomless sex with the last partner whose HIV status was positive or unknown. During the past 12 months, 5.0% injected drugs, 2.3% did not always use a sterile needle to inject for gender affirmation, and 3.5% shared a syringe to inject drugs or for gender affirmation. More than seven in 10 (73.2%) reported receiving transgender-specific health care within the past 12 months, and 70.2%

TABLE 2. Number and percentage of transgender women without HIV infection,* by selected characteristics — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,† United States, 2019–2020

Characteristic	No. (%)
Sociodemographic	
Age at interview, yrs	
18–29	358 (39.7)
30–39	253 (28.1)
≥40	290 (32.2)
Race and ethnicity§	
American Indian or Alaska Native	6 (0.7)
Asian	24 (2.7)
Black or African American	209 (23.2)
Native Hawaiian or other Pacific Islander	35 (3.9)
White	146 (16.2)
Multiracial	74 (8.2)
Hispanic or Latina	407 (45.2)
Education	
<High school	180 (20.0)
High school diploma or equivalent	317 (35.2)
Some college or technical degree	270 (30.0)
College degree or more	133 (14.8)
2019 poverty level¶	
At or below Federal poverty level	548 (61.4)
Above Federal poverty level	344 (38.6)
Current health insurance	
Yes	698 (77.4)
No	204 (22.6)
HIV associated	
Sexual behavior	
No. of sex partners past 12 months	
0–1	274 (30.8)
2–4	238 (26.7)
5–9	140 (15.7)
≥10	239 (26.8)
Anal or vaginal sex without a condom past 12 months	
Yes	581 (64.6)
No	319 (35.4)
Exchange sex past 12 months	
Yes	308 (34.1)
No	594 (65.9)
Last partner's HIV status	
Negative	432 (55.7)
Positive	25 (3.2)
Unknown**	319 (41.1)
Condomless anal or vaginal sex with last partner whose HIV status was positive or unknown**	
Yes	112 (14.5)
No	661 (85.5)
Injection behavior	
Injected drugs past 12 months	
Yes	45 (5.0)
No	856 (95.0)
Always used sterile needle to inject for gender affirmation past 12 months	
Did not inject	494 (54.8)
Did inject, always used sterile needles	386 (42.8)
Did inject, did not always use sterile needles	21 (2.3)
Nonsterile syringe sharing past 12 months	
Yes	32 (3.5)
No	870 (96.5)
Gender-affirming care	
Transgender-specific health care††	
Yes	657 (73.2)
No	240 (26.8)
Transgender-specific health insurance coverage§§	
Yes	568 (70.2)
No	241 (29.8)
Hormone use for gender affirmation	
Currently taking hormones	604 (68.1)
Want to take hormones¶¶	209 (23.6)
Do not want to take hormones¶¶	74 (8.3)
PrEP	
Awareness	
Yes	827 (91.8)
No	74 (8.2)
Discussion with health care provider past 12 months	
Yes	510 (56.6)
No	391 (43.4)
Use past 12 months	
Yes	288 (32.0)
No	613 (68.0)
Total	**902 (100.0)**

Abbreviation: PrEP = pre-exposure prophylaxis.

* N = 902 participants with a negative National HIV Behavioral Surveillance HIV test result. Numbers might not sum to totals because of missing data.

† Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.

§ Persons of Hispanic or Latina (Hispanic) origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.

¶ 2019 Federal poverty level thresholds were calculated on the basis of U.S. Department of Health and Human Services Federal poverty level guidelines (https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/prior-hhs-poverty-guidelines-federal-register-references/2019-poverty-guidelines).

** Unknown includes participants who said they didn't know the HIV status of their last partner and two participants who reported that their last partner's HIV test result was indeterminate.

†† Transgender-specific health care was measured as "Ever having a provider with whom you are comfortable discussing gender related issues."

§§ Transgender-specific health insurance coverage was measured as "Does your current health insurance cover hormones for gender transition or affirmation?"

¶¶ Participants who were not currently taking hormones were asked whether they want to take hormones for gender affirmation.

currently had transgender-specific health insurance coverage. Approximately two thirds (68.1%) were currently taking hormones, 23.6% wanted to but were not currently taking hormones, and 8.2% were not currently taking hormones and did not want to take them.

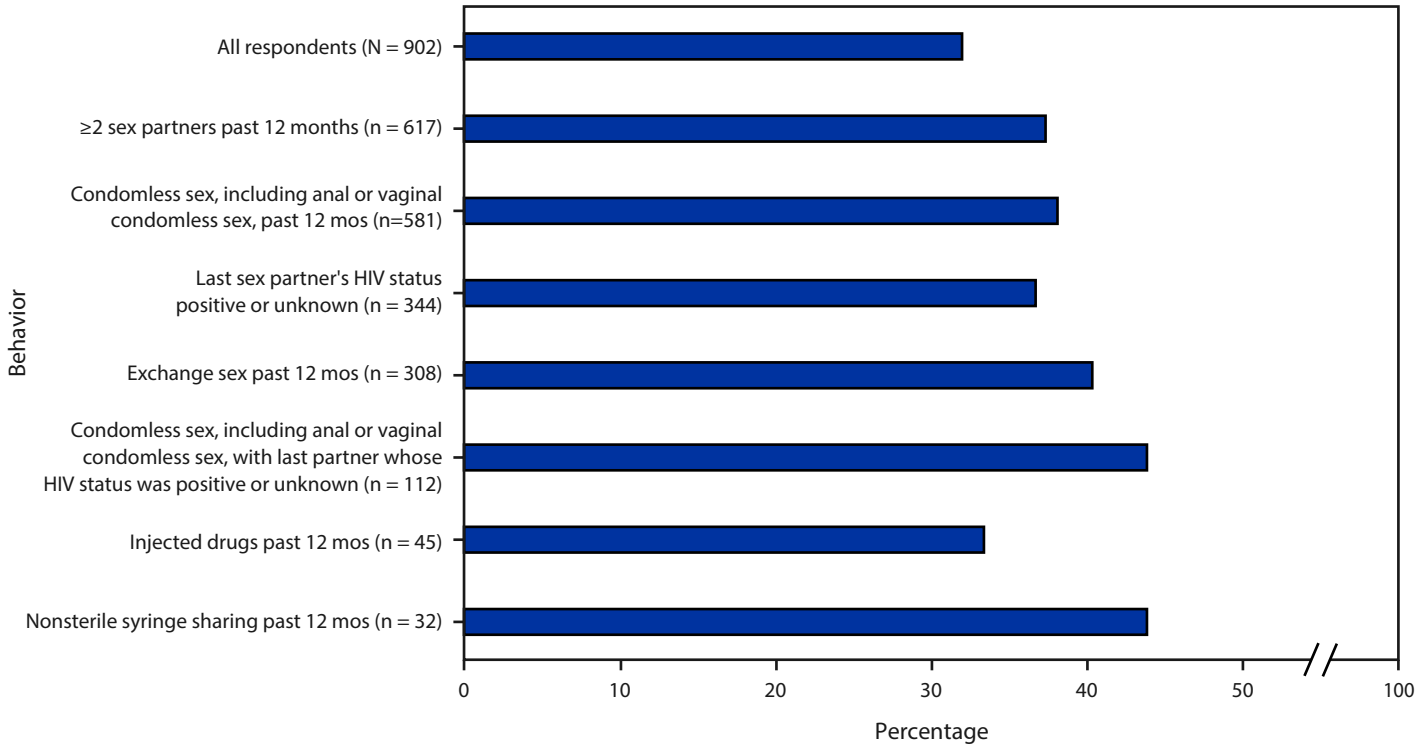
During the past 12 months, a majority of the 902 transgender women without HIV infection reported PrEP awareness (91.8%), more than half (56.6%) had discussed PrEP with a health care provider, and approximately one-third (32.0%) had used PrEP (Table 2). PrEP use was reported by 37.0% of those who had two or more sex partners, 38.0% of those who

had condomless sex, 37.0% of those whose last sex partner's HIV status was positive or unknown, 40.0% of those who received money or drugs in exchange for sex, and 44.0% of those who had condomless sex with last partner whose HIV status was positive or unknown (Figure). PrEP use also was reported by 33.0% of transgender women who injected drugs and by 44.0% who shared a syringe to inject drugs or for gender affirmation.

In the final multivariate model, transgender women who had condomless sex, who reported their last sex partner had HIV infection, or who received money or drugs in exchange for sex were more likely to have recently discussed PrEP than transgender women who did not report these behaviors (Table 3). Participants who had ever had transgender-specific health care and who currently had transgender-specific health insurance coverage were more likely to have recently discussed PrEP than participants lacking transgender-specific health care or insurance. Participants who wanted to but were not currently taking hormones were less likely to have recently discussed PrEP than participants currently taking hormones. Transgender women aged ≥40 years were less likely to have recently discussed PrEP than transgender women aged 18–29 years.

In the final multivariate model, transgender women who were Black or Hispanic were more likely to report recent PrEP use than White transgender women (Table 4). Participants who had two or more sex partners were more likely to report recent PrEP use compared with those with 0–1, 2–4, 5–9, and >10 partners. Transgender women who had condomless sex whose last sex partner had HIV infection and who had condomless sex with a last partner whose HIV status was positive or unknown were more likely to report recent PrEP use than transgender women who did not report these behaviors. Transgender women without HIV infection who had ever had transgender-specific health care and who currently had transgender-specific health insurance coverage were more likely to report recent PrEP use than transgender women lacking transgender-specific health care or insurance. Participants who wanted to but were not currently taking PrEP were less likely to recently use PrEP than participants who currently were taking hormones. Participants aged ≥40 years were less likely to have recently used PrEP than participants aged 18–29.

FIGURE. Percentage of transgender women without HIV infection who used pre-exposure prophylaxis during the past 12 months,* by sexual and injection behaviors† — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,§ United States, 2019–2020¶



* N = 902 participants with a negative National HIV Behavioral Surveillance HIV testing result.
† Behaviors are not mutually exclusive.
§ Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.
¶ Unknown includes participants who said they did not know the HIV status of their last partner and two participants who reported that their last partner's HIV test result was indeterminate.

TABLE 3. Number, percentage, and adjusted prevalence ratios among transgender women without HIV infection discussing pre-exposure prophylaxis with a health care provider,* by selected characteristics — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,† United States, 2019–2020

	PrEP discussion with health care provider past 12 months				
		Bivariate association		Multivariate model	
Characteristic	No. (%)	aPR§ (95% CI)	p value	aPR§ (95% CI)	p value
Age at interview, yrs					
18–29	221 (61.7)	Ref		Ref	
30–39	138 (54.5)	0.89 (0.78–1.02)	0.09	0.92 (0.81–1.04)	0.18
≥40	150 (51.7)	0.78 (0.69–0.87)	<0.01	0.85 (0.77–0.95)	<0.01
Race and ethnicity¶					
Black or African American	126 (60.3)	1.24 (0.92–1.67)	0.16	—**	—
White	71 (48.6)	Ref		—	—
Another race††	74 (53.2)	1.20 (0.86–1.68)	0.29	—	—
Hispanic or Latina	239 (58.7)	1.22 (0.93–1.61)	0.16	—	—
Education					
<High school	96 (53.3)	0.97 (0.74–1.26)	0.80	—	—
High school diploma or equivalent	189 (59.6)	1.11 (0.94–1.32)	0.21	—	—
Some college or technical degree	154 (57.0)	1.07 (0.91–1.26)	0.40	—	—
College degree or more	70 (52.6)	Ref		—	—
Health insurance					
Yes	413 (59.2)	1.24 (1.06–1.46)	<0.01	—	—
No	97 (47.5)	Ref		—	—
2019 poverty level§§					
At or below the Federal poverty level	321 (58.6)	1.02 (0.91–1.15)	0.70	—	—
Above the Federal poverty level	187 (54.4)	Ref		—	—
Number of sex partners past 12 months					
0–1	118 (43.1)	Ref		—	—
2–4	142 (59.7)	1.38 (1.18–1.60)	<0.01	—	—
5–9	87 (62.1)	1.41 (1.20–1.67)	<0.01	—	—
≥10	155 (64.9)	1.51 (1.27–1.80)	<0.01	—	—
Condomless anal or vaginal sex past 12 months					
Yes	367 (63.2)	1.45 (1.20–1.74)	<0.01	1.18 (1.01–1.39)	0.04
No	142 (44.5)	Ref		Ref	
Last partner's HIV status					
Negative	260 (60.2)	Ref		Ref	
Positive	20 (80.0)	1.27 (1.06–1.52)	0.01	1.21 (1.03–1.42)	0.02
Unknown¶¶	187 (58.6)	0.99 (0.90–1.08)	0.76	1.00 (0.91–1.09)	0.97
Condomless anal or vaginal sex with last partner whose HIV status was positive or unknown¶					
Yes	66 (58.9)	0.94 (0.83–1.07)	0.36	—	—
No	399 (60.4)	Ref		—	—
Exchange sex past 12 months					
Yes	198 (64.3)	1.21 (1.09–1.35)	<0.01	1.13 (1.03–1.25)	0.01
No	312 (52.5)	Ref		Ref	
Injected drugs past 12 months					
Yes	28 (62.2)	1.10 (0.88–1.38)	0.40	—	—
No	482 (56.3)	Ref		—	—
Nonsterile syringe sharing, past 12 months					
Yes	23 (71.9)	1.28 (0.99–1.67)	0.06	—	—
No	487 (56.0)	Ref		—	—
Transgender-specific health care					
Yes	405 (61.6)	1.38 (1.21–1.58)	<0.01	1.25 (1.08–1.44)	<0.01
No	105 (43.8)	Ref		Ref	
Transgender-specific health insurance coverage					
Yes	361 (63.6)	1.33 (1.16–1.53)	<0.01	1.19 (1.05–1.35)	<0.01
No	114 (47.3)	Ref		Ref	
Hormone use for gender affirmation					
Currently taking hormones	386 (63.9)	Ref		Ref	
Want to take hormones***	88 (42.1)	0.69 (0.60–0.79)	<0.01	0.85 (0.73–0.99)	0.04
Do not want to take hormones***	29 (39.2)	0.63 (0.51–0.77)	<0.01	0.67 (0.40–1.12)	0.13
Total	**510 (56.6)**	**NA**	**NA**	**NA**	**NA**

See table footnotes on the next page.

TABLE 3. (*Continued*) Number, percentage, and adjusted prevalence ratios among transgender women without HIV infection discussing pre-exposure prophylaxis with a health care provider,* by selected characteristics — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,† United States, 2019–2020

Abbreviations: aPR = adjusted prevalence ratio; NA = not applicable; PrEP = pre-exposure prophylaxis; Ref = referent group.

* N = 510 participants with negative National HIV Behavioral Surveillance HIV test results and who discussed PrEP with a health care provider. Numbers might not sum to totals because of missing data.

† Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.

§ Adjusted prevalence ratios in the bivariate and multivariate models accounted for respondent-driven sampling method by clustering on recruitment chain and adjusting for urban area and network size. The multivariate model also adjusted for the other variables with results listed in the column.

¶ Persons of Hispanic or Latina (Hispanic) origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.

** Dashes indicate variables not included in the multivariable model because there was not a statistically significant association in the bivariate association.

†† Includes participants who identified as American Indian or Alaska Native, Asian, Native Hawaiian or other Pacific Islander, or persons of multiple races.

§§ 2019 Federal poverty level thresholds were calculated on the basis of U.S. Department of Health and Human Services Federal poverty level guidelines (https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/prior-hhs-poverty-guidelines-federal-register-references/2019-poverty-guidelines).

¶¶ Unknown includes participants that said they didn't know the HIV status of their last partner and two participants who reported that their last partner's HIV test result was indeterminate.

*** Participants who were not currently taking hormones were asked whether they want to take hormones for gender affirmation.

Discussion

The findings in this report are encouraging. Awareness of PrEP in this sample was high (92.0%) compared with previous studies (*6*,*14*–*16*), which might indicate progress in increasing awareness of PrEP as an HIV prevention option for transgender women. In addition, transgender women without HIV infection who engaged in sexual behaviors that might be associated with HIV acquisition were more likely to discuss PrEP with a health care provider and use it.

Further, Hispanic transgender women were 1.7 times more likely and Black transgender women were 1.4 times more likely than their White counterparts to use PrEP. These racial and ethnic differences in PrEP use are important because of the substantial racial and ethnic inequities in HIV infection among transgender women. Estimates of HIV prevalence among Black transgender women range from 44% to 62% and from 26% to 35% for Hispanic transgender women, compared with from 7% to 17% among White transgender women (*9*). In addition, a recent study estimated that approximately 88% of Black and Latina transgender women could benefit from PrEP, indicating a potential substantial need for PrEP among transgender women of color (*17*).

Exchange sex did not remain statistically significant in the final multivariate model for PrEP use, whereas other behaviors (e.g., number of sex partners and condomless sex) did stay in the final model. Exchange sex on its own is not a risk for HIV acquisition; therefore, it is reasonable that a behavior that is more directly associated with HIV acquisition (e.g., condomless sex) remained associated with PrEP use and exchange sex did not. Yet, one in three transgender women in the study reported exchange sex during the past year, and often sex workers experience social, legal, and economic marginalization that has been associated with HIV transmission (*5*,*18*) that can be mitigated (e.g., one systematic review found that providing sensitivity training to law enforcement officials resulted in sex workers reporting considerably greater ability to negotiate safer sex practices and less sexual or physical violence from clients) (*19*). However, in many cases, these challenges are difficult to mitigate, and PrEP could play an important role in supporting a person's autonomy to prevent HIV acquisition.

Although prevalence of injection-related behaviors (i.e., injection drug use or nonsterile injection of gender-affirming procedures) was low in this sample, nonsterile injection can be a source of HIV acquisition for transgender women (*20*–*22*). Access to sterile injection equipment can be a problem for transgender women who do not have access to gender-affirming treatments (e.g., hormones or silicone) through the health care system and therefore might use nonprescribed treatments (*16*,*21*,*22*). Ensuring access to sterile syringes for transgender women who might inject drugs or use syringes for gender-affirming treatments is important. Syringe services programs (https://www.cdc.gov/ssp/index.html) are an important part of HIV prevention strategies (*23*) and might offer syringes that are specifically needed for gender-affirming injection in addition to existing sterile syringe services that lower HIV risk related to injection drug use (*24*,*25*). Further, CDC recommends assessing risk for nonsterile injection use and providing PrEP to persons who report nonsterile injection behaviors (*1*).

Despite a high prevalence of PrEP awareness and use in the survey participants, overall, only one third of transgender women used PrEP during the past 12 months. When looking independently at the percentage of transgender women who used PrEP by sexual and injection behaviors, PrEP use ranged from 33.0% to 44.0%, respectively, among participants reporting each of the behaviors. The findings from this analysis are similar to existing evidence that also indicates suboptimal PrEP use among transgender women who might benefit from its use (*6*,*11*,*26*–*29*). Concerns about interactions between hormones and PrEP, missed opportunities within the health care system, and mistrust of the health care system because of experiences of discrimination, have been reasons noted for low PrEP use among transgender women (*5*,*6*,*10*,*29*,*30*).

Transgender women who had access to and were using gender-affirming care, including transgender women taking hormones, were more likely to have discussions with a health care provider about PrEP and use PrEP; the strength of these associations remained in the multivariate model. Other studies have identified that providing gender-affirming care can increase engagement in HIV prevention services and improve viral suppression outcomes (*6*,*28*,*31*,*32*). Current health insurance, which typically is a measure of health care access, did not remain a statistically significant measure in the multivariate models. To what extent gender-affirming care initiates transgender patients into health care systems where HIV services are more accessible or whether increasing trust in gender-affirming health care systems fosters improved engagement in HIV prevention is unclear. Evidence from a qualitative study of transgender women indicates that both might be operating; having positive experiences within the health care system and combining PrEP and gender-related health care visits were both identified as facilitators for PrEP use (*33*). Another study found that, among transgender women with HIV infection, gender affirmation and health empowerment moderated the negative effects of discrimination to improve viral suppression (*32*). The specific dynamics by which gender-affirming care enhances engagement and retention could benefit from further study. Regardless of the underlying mechanisms, these findings indicate that access to and use of gender-affirming care might be an important way to reach transgender women to provide other prevention health services, including PrEP.

In addition to providing gender-affirming care, certain recent evidence also has pointed to the importance of providing support services (e.g., transportation and legal and mental health services to improve PrEP initiation, retention, and adherence for transgender women) (*34*). Moreover, interventions that include shared decision making that are community led and culturally appropriate also have been identified as promising approaches to increasing PrEP use among Black and Hispanic transgender women (*16*,*34*,*35*). CDC is pursuing a variety of prevention strategies including funding transgender-focused prevention programs, researching HIV interventions, building the capacity of the HIV workforce, and developing and disseminating social marketing campaigns. One example is a pilot program (https://www.cdc.gov/hiv/funding/announcements/ps22-2209/index.html) that funds community-based organizations to develop community-to-clinic health models to provide access to integrated status-neutral HIV prevention and care services, gender-affirming services that include access to or referral to hormone therapy, and primary health care. Another example is CDC's evidence-based Let's Stop HIV Together (https://www.cdc.gov/stophivtogether/index.html) social marketing campaign that includes tailored resources for transgender audiences. The campaign's HIV Nexus (https://www.cdc.gov/hiv/clinicians/index.html) clinician portal (https://www.cdc.gov/endhiv/index.html) includes the Transforming Health website (https://www.cdc.gov/hiv/clinicians/transforming-health/index.html) where CDC offers educational materials for health care and social service providers to help them improve care for transgender persons with HIV infection and make clinical environments more welcoming to transgender patients.

Limitations

General limitations for the NHBS-Trans are available in the overview and methodology report of this supplement (*13*). The findings in this report are subject to at least four additional limitations. First, the sample is not representative of transgender women living outside of the seven urban areas. The cities included in this analysis are urban areas that might have more resources for engaging transgender women in PrEP than in other geographic areas. Because of the hard-to-reach nature of transgender women, the data might not be representative of all transgender women residing in the seven urban areas. Second, the data are cross-sectional, and therefore directionality between covariates and PrEP discussions and use cannot be determined. Third, the sexual and injection behaviors included in the analysis are not in exact alignment with CDC clinical practice guidelines for PrEP (*1*); for example, the time frame for assessed behaviors differed (e.g., past 12 months and last sex) and the survey did not assess a recent diagnosis of sexually transmitted infection. Finally, the PrEP questions included in NHBS-Trans were limited to use within the past 12 months and did not include assessment of continued or effective use of PrEP, which are critical for the prevention of HIV.

Conclusion

Half of transgender women without HIV infection had discussed PrEP with their health care provider during the past year, and one third had used PrEP. Although transgender women who reported sexual behaviors that are associated with HIV acquisition were more likely to have PrEP discussions with their health care provider and use PrEP, many who could benefit from PrEP were not using it. Because transgender women are one of the groups most affected by HIV (*9*,*36*), providing access to PrEP is critical to reducing HIV acquisition risk among transgender women and to reaching the goals for Ending the HIV Epidemic in the United States (*2*). Use of gender-affirming care was associated with having discussions

TABLE 4. Number, percentage, and adjusted prevalence ratios of transgender women without HIV infection who used pre-exposure prophylaxis,* by selected characteristics — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,† United States, 2019–2020

		PrEP use past 12 months			
		Bivariate association		Multivariate model	
Characteristic	No. (%)	aPR§ (95% CI)	p value	aPR§ (95% CI)	p value
Age at interview, yrs					
18–29	123 (34.4)	Ref		Ref	
30–39	84 (33.2)	0.96 (0.78–1.17)	0.66	1.00 (0.81–1.23)	0.98
≥40	80 (27.6)	0.70 (0.57–0.86)	<0.01	0.79 (0.65–0.97)	0.02
Race and ethnicity¶					
Black or African American	64 (30.6)	1.33 (0.87–2.06)	0.19	1.42 (1.07–1.89)	0.02
White	33 (22.6)	Ref		Ref	
Another race**	41 (29.5)	1.47 (0.92–2.36)	0.11	1.38 (0.95–2.01)	0.09
Hispanic or Latina	150 (36.9)	1.72 (1.16–2.55)	<0.01	1.67 (1.26–2.21)	<0.01
Education					
<High school	51 (28.3)	1.00 (0.75–1.32)	0.98	—††	—
High school diploma or equivalent	110 (34.7)	1.28 (0.98–1.68)	0.07	—	—
Some college or technical degree	91 (33.7)	1.26 (0.86–1.84)	0.23	—	—
College degree or more	36 (27.1)	Ref		—	—
Health insurance					
Yes	240 (34.4)	1.35 (1.05–1.72)	0.02	—	—
No	48 (23.5)	Ref		—	—
2019 poverty level§§					
At or below Federal poverty level	178 (32.5)	0.96 (0.78–1.17)	0.67	—	—
Above Federal poverty level	109 (31.7)	Ref		—	—
Number of sex partners past 12 months					
0–1	53 (19.3)	Ref		Ref	
2–4	78 (32.8)	1.70 (1.27–2.27)	<0.01	1.35 (1.10–1.66)	<0.01
5–9	54 (38.6)	1.94 (1.40–2.69)	<0.01	1.60 (1.25–2.04)	<0.01
≥10	98 (41.0)	2.18 (1.54–3.10)	<0.01	1.48 (1.10–1.98)	<0.01
Condomless anal or vaginal sex past 12 months					
No	66 (20.7)	Ref		Ref	
Yes	221 (38.0)	1.88 (1.47–2.39)	<0.01	1.57 (1.28–1.93)	<0.01
Last partner's HIV status					
Negative	140 (32.4)	Ref		Ref	
Positive	14 (56.0)	1.61 (1.19–2.18)	<0.01	1.49 (1.09–2.05)	0.01
Unknown¶¶	112 (35.1)	1.10 (0.84–1.45)	0.47	0.99 (0.75–1.31)	0.94
Condomless anal or vaginal sex with last partner whose HIV status was positive or unknown					
Yes	49 (43.8)	1.30 (1.02–1.66)	0.03	1.40 (1.06–1.83)	0.02
No	216 (32.7)	Ref		Ref	
Exchange sex past 12 months					
Yes	124 (40.3)	1.44 (1.15–1.79)	<0.01	—	—
No	164 (27.6)	Ref		—	—
Injected drugs past 12 months					
Yes	15 (33.3)	1.04 (0.71–1.54)	0.83	—	—
No	273 (31.9)	Ref		—	—
Nonsterile syringe sharing past 12 months					
Yes	14 (43.8)	1.43 (1.00–2.07)	0.053	—	—
No	274 (31.5)	Ref		—	—
Transgender-specific health care					
Yes	240 (36.5)	1.71 (1.39–2.10)	<0.01	1.42 (1.07–1.88)	0.02
No	48 (20.0)	Ref		Ref	
Transgender-specific health insurance coverage					
Yes	216 (38.0)	1.48 (1.20–1.83)	<0.01	1.39 (1.06–1.83)	0.02
No	56 (23.2)	Ref		Ref	
Hormone use for gender affirmation					
Currently taking hormones	230 (38.1)	Ref		Ref	
Want to take hormones***	41 (19.6)	0.57 (0.42–0.76)	<0.01	0.73 (0.57–0.94)	0.02
Do not want to take hormones***	12 (16.2)	0.46 (0.31–0.68)	<0.01	0.72 (0.37–1.41)	0.34
Total	**288 (32.0)**	**NA**	**NA**	**NA**	**NA**

See table footnotes on the next page.

TABLE 4. (*Continued*) Number, percentage, and adjusted prevalence ratios of transgender women without HIV infection who used pre-exposure prophylaxis,* by selected characteristics — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,† United States, 2019–2020

Abbreviations: aPR = adjusted prevalence ratio; NA = not applicable; PrEP = pre-exposure prophylaxis.
* N = 288 participants with negative National HIV Behavioral Surveillance HIV test results who used PrEP. Numbers might not sum to totals because of missing data.
† Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.
§ Adjusted prevalence ratios in the bivariate and multivariate models accounted for respondent-driven sampling method by clustering on recruitment chain and adjusting for urban area and network size. The multivariate model also adjusted for the other variables with results listed in the column.
¶ Persons of Hispanic or Latina (Hispanic) origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.
** Includes participants who identified as American Indian or Alaska Native, Asian, Native Hawaiian or other Pacific Islander, or persons of multiple races.
†† Dashes indicate variable not included in the multivariable model because there was not a statistically significant association in the bivariate association.
§§ 2019 Federal poverty level thresholds were calculated on the basis of U.S. Department of Health and Human Services Federal poverty level guidelines (https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/prior-hhs-poverty-guidelines-federal-register-references/2019-poverty-guidelines).
¶¶ Unknown includes participants who said they didn't know the HIV status of their last partner and two participants who reported that their last partner's HIV test result was indeterminate.
*** Participants who were not currently taking hormones were asked whether they wanted to take hormones for gender affirmation.

about PrEP with a health care provider and PrEP use. Improving access to gender-affirming care for transgender women and training health care providers that serve transgender women to incorporate HIV prevention, including PrEP, into their services are strategies that might help increase PrEP use among transgender women.

National HIV Behavioral Surveillance Among Transgender Women Study Group

Narquis Barak, CrescentCare; Kathleen A. Brady, Philadelphia Department of Public Health; Sarah Braunstein, New York City Department of Health and Mental Hygiene; Jasmine Davis, CrescentCare; Sara Glick, University of Washington, School of Medicine, Division of Allergy and Infectious Diseases, Public Health – Seattle & King County, HIV/STD Program; Andrea Harrington, Philadelphia Department of Public Health; Jasmine Lopez, New York City Department of Health and Mental Hygiene; Yingbo Ma, Los Angeles County Department of Public Health; Aleks Martin, Public Health – Seattle & King County, HIV/STD Program; Genetha Mustaafaa, Georgia Department of Public Health; Tanner Nassau, Philadelphia Department of Public Health; Gia Olaes, Los Angeles County Department of Public Health; Jennifer Reuer, Washington State Department of Health; Alexis Rivera, New York City Department of Health and Mental Hygiene; William T. Robinson, Louisiana State University Health Science Center in New Orleans – School of Public Health, Louisiana Office of Public Health STD/HIV/Hepatitis Program; Ekow Kwa Sey, Los Angeles County Department of Public Health; Sofia Sicro, San Francisco Department of Public Health; Brittany Taylor, Georgia Department of Public Health; Dillon Trujillo, San Francisco Department of Public Health; Erin Wilson, San Francisco Department of Public Health; Pascale Wortley, Georgia Department of Public Health.

Conflicts of Interest

All authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. No potential conflicts of interest were disclosed.

References

1. CDC. US Public Health Service. Preexposure prophylaxis for the prevention of HIV infection in the United States—2021 update: a clinical practice guideline. Atlanta, GA: US Department of Health and Human Services, CDC; 2021. https://www.cdc.gov/hiv/pdf/risk/prep/cdc-hiv-prep-guidelines-2021.pdf
2. Fauci AS, Redfield RR, Sigounas G, Weahkee MD, Giroir BP. Ending the HIV epidemic. JAMA 2019;321:844–5. PMID:30730529 https://doi.org/10.1001/jama.2019.1343
3. Grant RM, Lama JR, Anderson PL, et al.; iPrEx Study Team. Preexposure chemoprophylaxis for HIV prevention in men who have sex with men. N Engl J Med 2010;363:2587–99. PMID:21091279 https://doi.org/10.1056/NEJMoa1011205
4. Grohskopf LA, Chillag KL, Gvetadze R, et al. Randomized trial of clinical safety of daily oral tenofovir disoproxil fumarate among HIV-uninfected men who have sex with men in the United States. J Acquir Immune Defic Syndr 2013;64:79–86. PMID:23466649 https://doi.org/10.1097/QAI.0b013e31828ece33
5. Cooney EE, Reisner SL, Saleem HT, et al.; American Cohort to Study HIV Acquisition Among Transgender Women (LITE) Study Group. Prevention-effective adherence trajectories among transgender women indicated for PrEP in the United States: a prospective cohort study. Ann Epidemiol 2022;70:23–31. PMID:35398255 https://doi.org/10.1016/j.annepidem.2022.03.016
6. Sevelius JM, Keatley J, Calma N, Arnold E. 'I am not a man': trans-specific barriers and facilitators to PrEP acceptability among transgender women. Glob Public Health 2016;11:1060–75. PMID:26963756 https://doi.org/10.1080/17441692.2016.1154085
7. Townes A, Pyra M, Smith DK, et al. PrEP use and adherence among transgender persons in Chicago, IL (SHIPP Study, 2014–2018, USA). AIDS Behav 2023;27:901–8. PMID:36094640 https://doi.org/10.1007/s10461-022-03826-y
8. Deutsch MB, Glidden DV, Sevelius J, et al.; iPrEx investigators. HIV pre-exposure prophylaxis in transgender women: a subgroup analysis of the iPrEx trial. Lancet HIV 2015;2:e512–9. PMID:26614965 https://doi.org/10.1016/S2352-3018(15)00206-4
9. Becasen JS, Denard CL, Mullins MM, Higa DH, Sipe TA. Estimating the prevalence of HIV and sexual behaviors among the U.S. transgender population: a systematic review and meta-analysis, 2006–2017. Am J Public Health 2019;109:e1–8. PMID:30496000 https://doi.org/10.2105/AJPH.2018.304727
10. Poteat T, Wirtz A, Malik M, et al. A gap between willingness and uptake: findings from mixed methods research on HIV prevention among Black and Latina transgender women. J Acquir Immune Defic Syndr 2019;82:131–40. PMID:31180995 https://doi.org/10.1097/QAI.0000000000002112
11. Sevelius JM, Patouhas E, Keatley JG, Johnson MO. Barriers and facilitators to engagement and retention in care among transgender women living with human immunodeficiency virus. Ann Behav Med 2014;47:5–16. PMID:24317955 https://doi.org/10.1007/s12160-013-9565-8
12. Reisner SL, Radix A, Deutsch MB. Integrated and gender-affirming transgender clinical care and research. J Acquir Immune Defic Syndr 2016;72(Suppl 3):S235–42. PMID:27429189 https://doi.org/10.1097/QAI.0000000000001088

13. Kanny D, Lee K, Olansky E, et al. Overview and methodology of the National HIV Behavioral Surveillance Among Transgender Women—seven urban areas, United States, 2019–2020. In: National HIV Behavioral Surveillance Among Transgender Women—seven urban areas, United States, 2019–2020. MMWR Suppl 2024;73(No. Suppl-1):1–8.
14. Pacífico de Carvalho N, Mendicino CCP, Cândido RCF, Alecrim DJD, Menezes de Pádua CA. HIV pre-exposure prophylaxis (PrEP) awareness and acceptability among trans women: a review. AIDS Care 2019;31:1234–40. PMID:31043069 https://doi.org/10.1080/09540121.2019.1612014
15. Kuhns LM, Reisner SL, Mimiaga MJ, Gayles T, Shelendich M, Garofalo R. Correlates of PrEP indication in a multi-site cohort of young HIV-uninfected transgender women. AIDS Behav 2012;17:1310–4. PMID:26336946 https://doi.org/10.1007/s10461-015-1182-z
16. Chandler CJ, Creasy SL, Adams BJ, et al. Characterizing biomedical HIV prevention awareness and use among Black transgender women in the United States. AIDS Behav 2021;25:2929–40. PMID:33606134 https://doi.org/10.1007/s10461-021-03189-w
17. Cooney EE, Reisner SL, Saleem HT, et al.; American Cohort to Study HIV Acquisition Among Transgender Women (LITE) Study Group. Prevention-effective adherence trajectories among transgender women indicated for PrEP in the United States: a prospective cohort study. Ann Epidemiol 2022;70:23–31. PMID:35398255 https://doi.org/10.1016/j.annepidem.2022.03.016
18. Poteat T, Wirtz AL, Radix A, et al. HIV risk and preventive interventions in transgender women sex workers. Lancet 2015;385:274–86. PMID:25059941 https://doi.org/10.1016/S0140-6736(14)60833-3
19. Platt L, Grenfell P, Meiksin R, et al. Associations between sex work laws and sex workers' health: a systematic review and meta-analysis of quantitative and qualitative studies. PLoS Med 2018;15:e1002680. PMID:30532209 https://doi.org/10.1371/journal.pmed.1002680
20. Wilson EC, Jin H, Liu A, Raymond HF. Knowledge, indications and willingness to take pre-exposure prophylaxis among transwomen in San Francisco, 2013. PLoS One 2015;10:e0128971. PMID:26039511 https://doi.org/10.1371/journal.pone.0128971
21. Wilson E, Rapues J, Jin H, Raymond HF. The use and correlates of illicit silicone or "fillers" in a population-based sample of transwomen, San Francisco, 2013. J Sex Med 2014;11:1717–24. PMID:24810672 https://doi.org/10.1111/jsm.12558
22. Benotsch EG, Zimmerman RS, Cathers L, et al. Non-medical use of prescription drugs and HIV risk behaviour in transgender women in the Mid-Atlantic region of the United States. Int J STD AIDS 2016;27:776–82. PMID:26185044 https://doi.org/10.1177/0956462415595319
23. Broz D, Carnes N, Chapin-Bardales J, et al. Syringe services programs' role in ending the HIV epidemic in the US: why we cannot do it without them. Am J Prev Med 2021;61(Suppl 1):S118–29. PMID:34686281 https://doi.org/10.1016/j.amepre.2021.05.044
24. Tomar A, Spadine MN, Graves-Boswell T, Wigfall LT. COVID-19 among LGBTQ+ individuals living with HIV/AIDS: psycho-social challenges and care options. AIMS Public Health 2021;8:303–8. PMID:34017893 https://doi.org/10.3934/publichealth.2021023
25. World Health Organization. Policy brief: transgender people and HIV. Geneva, Switzerland: World Health Organization; 2015. https://iris.who.int/bitstream/handle/10665/179517/WHO_HIV_2015.17_eng.pdf
26. Sionéan C, DiClemente RJ, Wingood GM, et al. Psychosocial and behavioral correlates of refusing unwanted sex among African-American adolescent females. J Adolesc Health 2002;30:55–63. PMID:11755801 https://doi.org/10.1016/S1054-139X(01)00318-4
27. Shumaker SC, Frazier SK, Moser DK, Chung ML. Psychometric properties of the multidimensional scale of perceived social support in patients with heart failure. J Nurs Meas 2017;25:90–102. PMID:28395702 https://doi.org/10.1891/1061-3749.25.1.90
28. Sevelius JM, Xavier J, Chakravarty D, Keatley J, Shade S, Rebchook G; SPNS Transgender Women of Color Study Group. Correlates of engagement in HIV care among transgender women of color in the United States of America. AIDS Behav 2021;25(Suppl 1):3–12. PMID:34037930 https://doi.org/10.1007/s10461-021-03306-9
29. Zarwell M, John SA, Westmoreland D, et al. PrEP uptake and discontinuation among a U.S. national sample of transgender men and women. AIDS Behav 2021;25:1063–71. PMID:33057893 https://doi.org/10.1007/s10461-020-03064-0
30. Eaton LA, Matthews DD, Driffin DD, Bukowski L, Wilson PA, Stall RD; POWER Study Team. A multi-U.S. city assessment of awareness and uptake of pre-exposure prophylaxis (PrEP) for HIV prevention among Black men and transgender women who have sex with men. Prev Sci 2017;18:505–16. PMID:28101813 https://doi.org/10.1007/s11121-017-0756-6
31. Poteat TC, Radix A. HIV antiretroviral treatment and pre-exposure prophylaxis in transgender individuals. Drugs 2020;80:965–72. PMID:32451925 https://doi.org/10.1007/s40265-020-01313-z
32. Sevelius J, Chakravarty D, Neilands TB, et al.; HRSA SPNS Transgender Women of Color Study Group. Evidence for the model of gender affirmation: the role of gender affirmation and healthcare empowerment in viral suppression among transgender women of color living with HIV. AIDS Behav 2021;25(Suppl 1):64–71. PMID:31144131 https://doi.org/10.1007/s10461-019-02544-2
33. Storholm ED, Ogunbajo A, Nacht CL, et al. Facilitators of PrEP persistence among Black and Latinx transgender women in a PrEP demonstration project in Southern California. Behav Med 2022;22:1-12. PMID:35993278 https://doi.org/10.1080/08964289.2022.2105794
34. Sevelius JM, Glidden DV, Deutsch M, et al. Uptake, retention, and adherence to pre-exposure prophylaxis (PrEP) in TRIUMPH: a peer-led PrEP demonstration project for transgender communities in Oakland and Sacramento, California. J Acquir Immune Defic Syndr 2021;88(S1):S27–38. PMID:34757990 https://doi.org/10.1097/QAI.0000000000002808
35. McNulty MC, Acree ME, Kerman J, Williams HHS, Schneider JA. Shared decision making for HIV pre-exposure prophylaxis (PrEP) with Black transgender women. Cult Health Sex 2022;24:1033–46. PMID:33983866 https://doi.org/10.1080/13691058.2021.1909142
36. CDC. HIV infection, risk, prevention, and testing behaviors among transgender women—National HIV Behavioral Surveillance, 7 US cities, 2019–2020. Atlanta, GA: US Department of Health and Human Services, CDC; 2021. https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-special-report-number-27.pdf

Structural and Psychosocial Syndemic Conditions and Condomless Anal Intercourse Among Transgender Women — National HIV Behavioral Surveillance Among Transgender Women, Seven Urban Areas, United States, 2019–2020

Rebecca B. Hershow, PhD[1]; Lindsay Trujillo, MPH[2]; Evelyn Olansky[2]; Kathryn Lee, MPH[1]; Christine Agnew-Brune, PhD[1]; Cyprian Wejnert, PhD[1]; Monica Adams, PhD[1]; National HIV Behavioral Surveillance Among Transgender Women Study Group

[1]*Division of HIV Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, CDC, Atlanta, Georgia;*
[2]*Social & Scientific Systems, Inc., Silver Spring, Maryland*

Abstract

Psychosocial and structural syndemic conditions, including polydrug use and experiencing homelessness, frequently co-occur and might jointly increase HIV risk. Limited studies have assessed racial and ethnic differences in exposure to syndemic conditions and behaviors associated with HIV transmission among transgender women. This report examines the relation between syndemic conditions and condomless anal intercourse (CAI) among transgender women in seven urban areas in the United States to develop HIV prevention interventions for transgender women. During 2019–2020, transgender women in seven urban areas were recruited using respondent-driven sampling for a biobehavioral survey. Reported syndemic conditions (psychosocial: polydrug use, sexual violence, and psychological distress; structural: homelessness, incarceration, and exchange sex) were summed to create a syndemic score. Using modified Poisson regression to account for RDS, the study assessed whether the strength of the association between syndemic score and CAI differed by race and ethnicity. To assess additive interaction, the relative excess prevalence owing to interaction (REPI) and 95% CIs for selected pairs of syndemic conditions on CAI prevalence stratified by race and ethnicity were estimated. Of 1,348 transgender women (Black = 546, White = 176, and Hispanic = 626), 55% reported CAI; and 24% reported ≥3 syndemic conditions. Reporting additional syndemic conditions was associated with CAI for White, Hispanic, and Black participants. The association was significantly stronger for White than Black and Hispanic participants. Limited significant superadditive interactions were found, although the majority were between structural syndemic conditions. Racial and ethnic differences in REPI estimates were observed. Reporting more syndemic conditions was associated with increased CAI across racial and ethnic groups, demonstrating that HIV prevention efforts for transgender women should address structural and psychosocial syndemic conditions. Results differed by race and ethnicity, indicating that syndemic-focused interventions for transgender women should be tailored to racial and ethnic groups.

Introduction

Transgender women are disproportionately affected by HIV, and severe racial and ethnic disparities in HIV prevalence among transgender women exist (*1*,*2*). Transgender women might be disproportionately affected by HIV because they experience high levels of social, legal, and economic marginalization, thereby increasing exposure to syndemic conditions, including experiencing homelessness, incarceration, exchange sex, polydrug use, violence, and psychological distress (*3*–*13*). Syndemic theory posits that epidemics are produced by both diseases and social conditions (*14*,*15*). The theory emphasizes how structural factors (e.g., experiencing homelessness and incarceration) and psychosocial factors (e.g., sexual violence and polydrug use) jointly increase risk for HIV acquisition and transmission (*14*,*15*). Differences in exposure to syndemic conditions by race and ethnicity might explain the racial and ethnic disparities in HIV prevalence (*7*). No studies have assessed racial and ethnic disparities in syndemic conditions and behaviors associated with HIV transmission in a population-based sample of transgender women (*16*).

This report examines the relation between structural and psychosocial syndemic conditions (experiencing homelessness, incarceration, exchange sex, polydrug use, sexual violence, and psychological distress) and condomless anal intercourse (CAI) among Black or African American (Black), White, and Hispanic or Latina (Hispanic), transgender women in the United States. (Persons of Hispanic origin might be of

Corresponding author: Rebecca B. Hershow, Division of HIV Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, CDC. Telephone: 404-718-1597; Email: qdt8@cdc.gov.

any race but are categorized as Hispanic; all racial groups are non-Hispanic.) These findings can be used to develop HIV prevention interventions tailored for racial and ethnic groups of transgender women.

Methods

Data Source

This report includes survey data from the National HIV Behavioral Surveillance Among Transgender Women (NHBS-Trans), which was conducted by CDC during June 2019–February 2020 to assess behavioral risk factors, prevention usage, and HIV prevalence. Eligible participants completed an interviewer-administered questionnaire and were offered an HIV test. Definitions of demographics and social determinants of health are available in the Overview and Methodology Report of this supplement (17). The NHBS-Trans protocol, questionnaire, and documentation are available at https://www.cdc.gov/hiv/statistics/systems/nhbs/methods-questionnaires.html#trans. This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable Federal law and CDC policy.*

Applicable local institutional review boards in each participating project area approved NHBS-Trans activities. The final NHBS-Trans sample included 1,608 transgender women in seven urban areas in the United States (Atlanta, Georgia; Los Angeles, California; New Orleans, Louisiana; New York City, New York; Philadelphia, Pennsylvania; San Francisco, California; and Seattle, Washington) recruited using respondent-driven sampling. This analysis is limited to 1,348 eligible participants who had an HIV-negative or HIV-positive National HIV Behavioral Surveillance (NHBS) HIV test result; identified as Black, White, or Hispanic; and had no missing outcome data.

Measures

The outcome variable was past-year CAI, which was defined as having insertive or receptive anal sex without a condom during the past 12 months (Table 1). Psychosocial syndemic conditions included past-year polydrug use, past-year experience of sexual violence, and past-month psychological distress. Polydrug use was defined as having used speedball (combination of heroin and cocaine) or two or more types of drugs via injection or noninjection that were not provided by a health care professional during the past 12 months, including heroin, powder cocaine, crack cocaine, methamphetamine, painkillers (e.g., Oxycontin, Vicodin, morphine, or Percocet), downers (e.g., Klonopin, Valium, Ativan, or Xanax), or poppers or amyl nitrate; marijuana, alcohol, and fentanyl were not included. Experience of sexual violence was defined as being physically forced or verbally threatened to have sex when they did not want to during the past 12 months. To measure psychological distress, participants completed the validated, widely-used Kessler Psychological Distress Scale comprising six items asking participants how often they have been feeling emotions (e.g., nervous or hopeless) during the past 30 days; response options ranged from "All of the time" to "None of the time" (*18*–*20*). Participants with a composite score of 13–24 were categorized as experiencing psychological distress; those with a score of <13 were categorized as not experiencing psychological distress (*18*,*19*).

Structural syndemic conditions included past-year experiencing homelessness, past-year incarceration, and past-year exchange sex. Experiencing homelessness was defined as living on the street, in a shelter, in a single-room occupancy hotel, or in a car at any time during the past 12 months. Incarceration was defined as being held in a detention center, jail, or prison for >24 hours during the past 12 months. Exchange sex was defined as ever having received money or drugs in exchange for sex during the past 12 months. A syndemic score was calculated by summing together the number of structural and psychosocial syndemic conditions reported by each participant (range = 0–6). Covariates (age group, education level, relationship status, health insurance, and NHBS HIV test result) were selected based on their potential to confound the relation between syndemic conditions and CAI (*4*,*5*,*13*,*21*).

Data Analysis

This analysis was conducted in four steps using SAS software (version 9.4; SAS Institute). First, descriptive analyses were used to characterize the overall sample and by racial and ethnic groups. Second, the independent associations between syndemic conditions and between each syndemic condition and CAI were estimated and stratified by race and ethnicity. Modified Poisson regression was used to generate adjusted prevalence ratios and 95% CIs for associations between pairs of syndemic conditions and between each syndemic condition and CAI. Third, analyses were conducted to assess whether the strength of the association between syndemic score and CAI differed by race and ethnicity (Figure 1). The effect of syndemic score, race and ethnicity, and interactions among syndemic score and race and ethnicity on CAI were estimated. For significant interaction terms ($p<0.05$), the effect of the syndemic score on the predicted probability of CAI by racial and ethnic group was estimated and graphed to

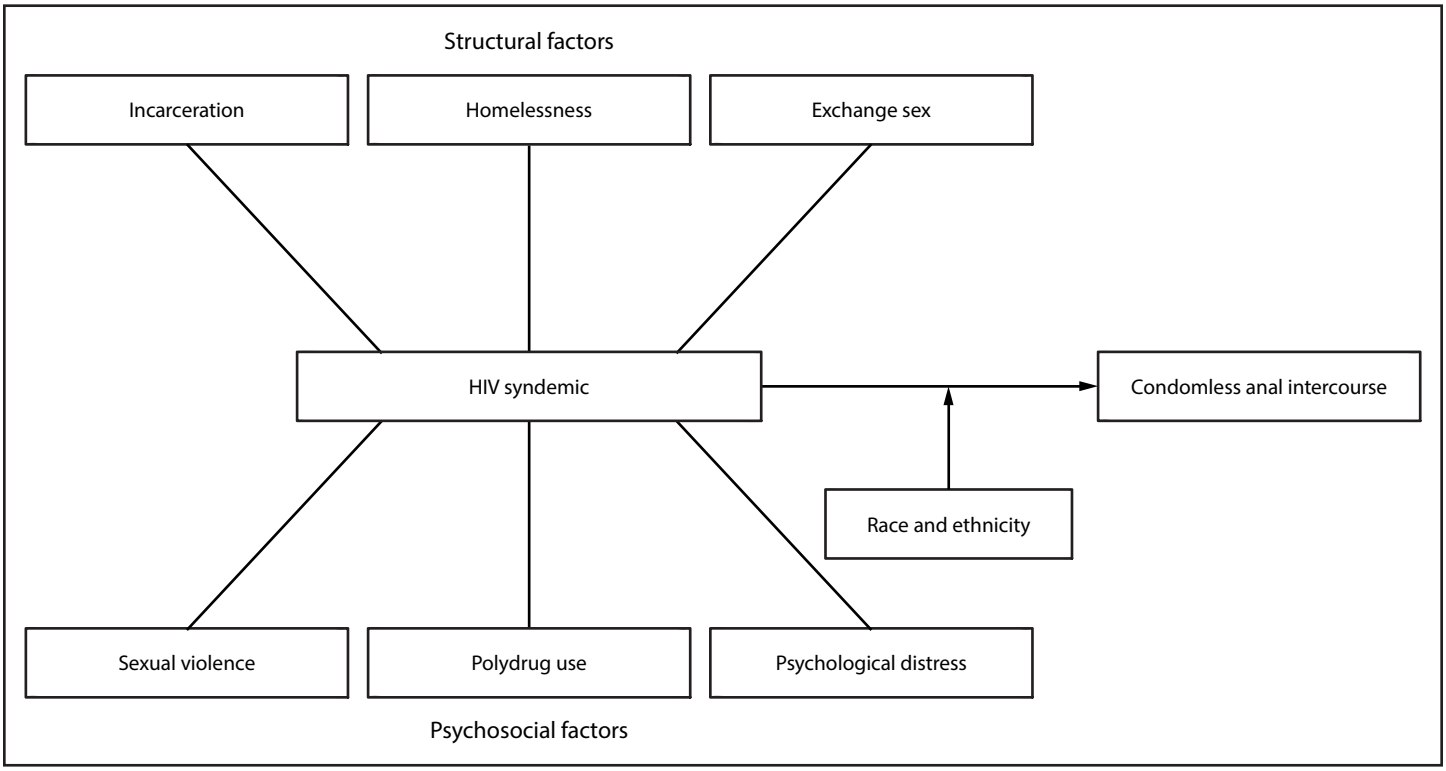
* 45 C.F.R. part 46, 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.

TABLE 1. Variables, questions, and analytic coding for selected sociodemographic characteristics, syndemic conditions, and occurrence of condomless anal intercourse among transgender women — National HIV Behavioral Surveillance System Among Transgender Women, seven urban areas,* United States, 2019–2020

Variable	Question	Analytic coding
Sociodemographic characteristic		
Age at interview, yrs	What is your date of birth?	18–24, 25–29, 30–39, 40–49, or ≥50
Education	What is the highest level of education you completed?	<High school, high school diploma or equivalent,some college or technical degree, or college degree or more
Relationship status	Of the [total number] sex partners you've had in the past 12 months, how many would you consider main partners? By main partner, I mean a person you have sex with and who you feel committed to above anyone else. This is a partner you would call your boyfriend, girlfriend, significant other, or life partner.	Partnered (reported having at least one main sexual partner) or single (reported having no main sexual partners)
Health insurance	Do you currently have health insurance or health care coverage?	Yes or no
NHBS HIV test result	NA†	HIV positive or HIV negative
Race and ethnicity§	Do you consider yourself to be of Hispanic, Latino/a, or Spanish origin? Which racial group or groups do you consider yourself to be in? You may choose more than one option.	Non-Hispanic Black or African American, Non-Hispanic White, or Hispanic or Latina
Urban area	NA¶	Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; or Seattle, WA
Psychosocial syndemic condition		
Polydrug use	*Injection drug use questions:* In the past 12 months, which drug did you inject most often? What other drugs did you inject? *Non-injection drug use questions:* In the past 12 months, did you use any of the following drugs? Methamphetamine (including meth, crystal, speed, or crank)? Crack cocaine? Powder cocaine that is smoked or snorted? Downers (benzos) such as Klonopin, Valium, Ativan, or Xanax? Painkillers such as Oxycontin, Vicodin, morphine, or Percocet? Heroin that is smoked or snorted? Poppers or amyl nitrate?	Yes (reported having used speedball [combination of heroin and cocaine] or two or more of the following types of drugs via injection or non-injection: heroin, powder cocaine, crack cocaine, methamphetamine, painkillers such as Oxycontin, Vicodin, morphine, or Percocet, downers such as Klonopin, Valium, Ativan, Xanax, or poppers or amyl nitrate) or no
Sexual violence	In the past 12 months, have you been forced to have sex when you did not want to? By forced, I mean physically forced or verbally threatened. By sex, I mean any sexual contact.	Yes or no
Psychological distress	During the past 30 days, how often did you feel nervous? During the past 30 days, how often did you feel hopeless? During the past 30 days, how often did you feel restless or fidgety? During the past 30 days, how often did you feel so sad or depressed that nothing could cheer you up? During the past 30 days, how often did you feel that everything was an effort? During the past 30 days, how often did you feel down on yourself, no good or worthless?	Experienced psychological distress (had a composite score of 13–24) or did not experience psychological distress (had a composite score below 13)
Structural syndemic condition		
Exchange sex	In the past 12 months, have you received money or drugs in exchange for sex?	Yes or no
Homelessness	In the past 12 months, that is, since [interview month] of last year, have you been homeless at any time? By homeless, I mean you were living on the street, in a shelter, in a single room occupancy hotel (SRO), or in a car.	Yes or no
Incarceration	During the past 12 months, that is, since [interview month] of last year, have you been held in a detention center, jail, or prison for more than 24 hours?	Yes or no
Overall syndemic score		
Syndemic score	NA	0–6 reported syndemic conditions (homelessness, incarceration, exchange sex, polydrug use, sexual violence, and psychological distress)
Outcome variable		
CAI	In the past 12 months, have you had insertive anal sex without a condom? In the past 12 months, have you had receptive anal sex without a condom?	Yes (reported having insertive or receptive anal sex without a condom) or no (reported not having insertive and receptive anal sex without a condom)

Abbreviations: CAI = condomless anal intercourse; NA = not applicable; NHBS = National HIV Behavioral Surveillance.
* Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.
† Determined based on NHBS HIV test results.
§ Persons of Hispanic or Latina (Hispanic) origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.
¶ Determined based on study project area location.

FIGURE 1. Conceptual model of analysis showing factors contributing to condomless anal intercourse — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,* United States, 2019–2020



* Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.

visualize the relations. Nonsignificant interaction terms were removed from the model. Finally, additive interactions between syndemic conditions on CAI were assessed and stratified by race and ethnicity. The relative excess prevalence owing to interaction (REPI) and 95% CIs were estimated for selected pairs of syndemic conditions (*22*–*27*). Pairs of syndemic conditions were selected based on empirical evidence of potential interactions on CAI among transgender women (*3*–*13*,*28*,*29*). REPI is one of the measures of additive interaction, or the difference of prevalence differences, as a proportion of baseline prevalence (*22*,*24*,*30*). A statistically significant REPI >0 indicates superadditivity and a statistically significant REPI <0 indicates subadditivity (*22*,*24*). Superadditivity indicates that two syndemic conditions produced a larger than expected prevalence of CAI beyond the sum of the independent effects of the conditions (*22*,*24*). Subadditivity indicates that the effects of two syndemic conditions on CAI was lower than the sum of the independent effects of the conditions (*22*,*30*).

The regression analyses were conducted using modified Poisson regression with robust error variance (*31*) and accounted for respondent-driven sampling method by clustering on recruitment chain and adjusting for urban area and network size. Analyses also controlled for covariates (age group, education level, relationship status, health insurance, and NHBS HIV test result).

Results

The sample comprised 1,348 transgender women (Black = 546, White = 176, and Hispanic = 626) (Table 2). Most participants were aged ≥30 years (68.9%). Nearly half of participants received an HIV-positive test result (43.5%); higher percentages of Black (61.7%) and Hispanic (35.0%) participants received HIV-positive test results compared with White participants (17.0%). The prevalence of syndemic conditions differed by racial and ethnic group. The prevalence of each psychosocial syndemic condition was highest among White participants compared with Black and Hispanic participants (polydrug use: 38.9% [White], 21.1% [Black], and 20.4% [Hispanic]; sexual violence: 18.8% [White], 11.0% [Black], and 16.9% [Hispanic]; psychological distress: 38.3% [White], 22.3% [Black], and 26.5% [Hispanic]).

For the structural syndemic conditions, the prevalence of exchange sex and incarceration was highest among Black and Hispanic participants compared with White participants (exchange sex: 34.1% [Black], 35.5% [Hispanic], and 28.4% [White]; incarceration: 18.2% [Black] 18.7% [Hispanic], and 13.1% [White]. The prevalence of homelessness was highest among White (45.7%) and Black participants (43.7%) compared with Hispanic participants (38.3%). Twenty-four

TABLE 2. Number and percentage of sociodemographic characteristics, syndemic conditions, and occurrence of condomless anal intercourse among transgender women, by racial and ethnic group — National HIV Behavioral Surveillance Among Transgender Women,* seven urban areas,† United States, 2019–2020

Characteristic	Black or African American§ (n = 546) No. (%)	White§ (n = 176) No. (%)	Hispanic or Latina§ (n = 626) No. (%)	Total (N = 1,348) No. (%)
Sociodemographic characteristic				
Age at interview, yrs¶				
18–24	59 (10.8)	24 (13.7)	78 (12.5)	**161 (12.0)**
25–29	107 (19.6)	39 (22.3)	112 (17.9)	**258 (19.2)**
30–39	165 (30.2)	49 (28.0)	160 (25.6)	**374 (27.8)**
40–49	98 (17.9)	22 (12.6)	135 (21.6)	**255 (18.9)**
≥50	117 (21.4)	41 (23.4)	141 (22.5)	**299 (22.2)**
Education¶				
<High school	103 (18.9)	14 (8.0)	194 (31.0)	**311 (23.1)**
High school diploma or equivalent	247 (45.3)	52 (29.5)	215 (34.4)	**514 (38.2)**
Some college or technical degree	158 (29.0)	68 (38.6)	164 (26.2)	**390 (29.0)**
College degree or more	37 (6.8)	42 (23.9)	52 (8.3)	**131 (9.7)**
Relationship status¶,**				
Single	208 (39.0)	82 (47.4)	274 (44.1)	**564 (42.5)**
Partnered	325 (61.0)	91 (52.6)	347 (55.9)	**763 (57.5)**
Reported having health insurance	469 (85.9)	155 (88.1)	497 (79.4)	**1,121 (83.2)**
NHBS HIV-positive test result††	337 (61.7)	30 (17.0)	219 (35.0)	**586 (43.5)**
Psychosocial syndemic condition				
Reported polydrug use past 12 months¶,§§	115 (21.1)	68 (38.9)	127 (20.4)	**310 (23.1)**
Experienced sexual violence past 12 months¶,¶¶	60 (11.0)	33 (18.8)	105 (16.9)	**198 (14.7)**
Experienced psychological distress past 30 days¶,***	122 (22.3)	67 (38.3)	165 (26.5)	**354 (26.3)**
Structural syndemic condition				
Reported exchange sex past 12 months†††	186 (34.1)	50 (28.4)	222 (35.5)	**458 (34.0)**
Reported homelessness past 12 months¶,§§§	238 (43.7)	80 (45.7)	240 (38.3)	**558 (41.5)**
Reported incarceration past 12 months¶,¶¶¶	99 (18.2)	23 (13.1)	117 (18.7)	**239 (17.8)**
Overall syndemic score				
Syndemic score¶,****				
0	157 (29.0)	43 (25.0)	165 (26.7)	**365 (27.4)**
1	149 (27.5)	47 (27.3)	175 (28.4)	**371 (27.9)**
2	111 (20.5)	29 (16.9)	135 (21.9)	**275 (20.7)**
3	70 (12.9)	20 (11.6)	81 (13.1)	**171 (12.8)**
4	44 (8.1)	17 (9.9)	33 (5.3)	**94 (7.1)**
5	9 (1.7)	12 (7.0)	25 (4.1)	**46 (3.5)**
6	2 (0.4)	4 (2.3)	3 (0.5)	**9 (0.7)**
Outcome variable				
Reported CAI past 12 months††††	**288 (52.7)**	**90 (51.1)**	**362 (57.8)**	**740 (54.9)**

Abbreviations: CAI = condomless anal intercourse; NHBS = National HIV Behavioral Surveillance.

* N = 1,348 participants had an HIV-negative or HIV-positive NHBS HIV test result; identified as Black or African American, White, or Hispanic or Latina; and had no missing outcome data.

† Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.

§ Persons of Hispanic or Latina (Hispanic) origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.

¶ Missing: Age: n = 1; education: n = 2; relationship status: n = 21; polydrug use: n = 5; sexual violence: n = 5; psychological distress: n = 4; homelessness: n = 2; incarceration: n = 3; and syndemic score: n = 17.

** Being partnered was defined as having at least one main sexual partner during the past 12 months. A main sexual partner was defined as someone the participant felt committed to above anyone else (e.g., a boyfriend, girlfriend, significant other, or life partner).

†† Participants with a reactive rapid NHBS HIV test result confirmed by supplemental rapid or laboratory-based HIV testing were categorized as HIV positive. Participants who self-reported being HIV negative and had a nonreactive rapid NHBS HIV test result were categorized as HIV negative.

§§ Polydrug use was defined as having used speedball (combination of heroin and cocaine) or two or more of the following types of drugs via injection or noninjection during the past 12 months: heroin; powder cocaine; crack cocaine; methamphetamine; painkillers (e.g., Oxycontin, Vicodin, morphine, or Percocet); downers (e.g., Klonopin, Valium, Ativan, or Xanax); or poppers or amyl nitrate.

¶¶ Sexual violence was defined as having been physically forced or verbally threatened to have sex when they did not want to.

*** Participants with a composite score of 13–24 were categorized as experiencing psychological distress; those with a score <13 were categorized as not experiencing psychological distress.

††† Exchange sex was defined as having received money or drugs in exchange for sex.

§§§ Experiencing homelessness was defined as living on the street, in a shelter, in a single room occupancy hotel, or in a car.

¶¶¶ Incarceration was defined as being held in a detention center, jail, or prison for >24 hours.

**** An overall syndemic score (0–6) for each participant was calculated by summing reported syndemic conditions (e.g., homelessness, incarceration, exchange sex, polydrug use, sexual violence, and psychological distress).

†††† Condomless anal intercourse was defined as having insertive or receptive anal sex without a condom.

percent of participants reported three or more syndemic conditions, including 30.8% of White participants, 23.1% of Black participants, and 23.0% of Hispanic participants. Among all participants, 54.9% reported CAI (57.8% of Hispanic participants, 52.7% of Black participants, and 51.1% of White participants).

Independent Associations Between Syndemic Conditions and Between Syndemic Conditions and CAI

Positive associations between most pairs of syndemic conditions were observed across racial and ethnic groups (Table 3). However, observed associations between syndemic conditions and CAI differed by race and ethnicity. Among Black participants, only exchange sex and polydrug use were independently associated with CAI. For White and Hispanic participants, all associations between syndemic conditions and CAI were significant except for the relation between psychological distress and CAI.

Association Between Syndemic Score and CAI

Reporting more syndemic conditions was significantly associated with reporting CAI for White, Hispanic, and Black participants (Table 4). Both interaction terms for syndemic score by race and ethnicity were statistically significant, illustrating that the association between syndemic score and CAI was significantly stronger for White than Hispanic and Black participants (Table 4) (Figure 2).

REPI Estimates

REPI estimates differed by race and ethnicity and by pairs of syndemic conditions (Figure 3). The directionality of REPI estimates often differed by racial and ethnic group, indicating that interactions between the same pair of syndemic conditions might be positive or superadditive for certain racial and ethnic groups and negative or subadditive for others. For REPI estimates between psychosocial syndemic conditions, there were significant REPI estimates for subadditive interactions between polydrug use and sexual violence on CAI prevalence among White (REPI = −1.11; 95% CI = −2.08 to −0.14) and Hispanic participants (REPI = −0.04; 95% CI = −0.07 to −0.01) and between sexual violence and psychological distress on CAI prevalence among Hispanic participants (REPI = −0.08; 95% CI = −0.13 to −0.03). A superadditive interaction was observed between sexual violence and psychological distress on CAI prevalence for White participants (REPI = 0.54; 95% CI = 0.10–0.99). For the significant REPI estimates between structural syndemic conditions, superadditive interactions were observed for incarceration and homelessness on CAI prevalence among White participants (REPI = 1.44; 95% CI = 1.06–1.81) and homelessness and exchange sex on CAI prevalence among Black (REPI = 0.38; 95% CI = 0.22–0.55) and White participants (REPI = 0.49; 95% CI = 0.29–0.68). For the REPI estimates between selected pairs of structural and psychosocial syndemic conditions, the only significant positive REPI estimate was between exchange sex and polydrug use among Hispanic participants (REPI = 0.18; 95% CI = 0.07–0.29). Significant negative REPI estimates were found between homelessness and psychological distress on CAI prevalence among Hispanic participants (REPI = −0.17; 95% CI = −0.27 to −0.06) and between exchange sex and polydrug use among White participants (REPI = −0.05; 95% CI = −0.07 to −0.03).

Discussion

In this analysis, syndemic conditions and CAI were prevalent among transgender women. Independent associations between syndemic conditions and between syndemic conditions and CAI were observed, demonstrating that HIV prevention efforts for transgender women should address structural and psychosocial syndemic conditions (*10*,*11*,*32*). Further, reporting more syndemic conditions was associated with increased CAI prevalence across racial and ethnic groups. Findings are consistent with other studies examining relations between co-occurring syndemic conditions and behaviors associated with HIV transmission among transgender women (*3*–*6*).

This analysis adds to the literature by testing for additive interactions between selected combinations of structural and psychosocial syndemic conditions on CAI. Similar analytic approaches have been used in research with men who have sex with men and help identify specific combinations of syndemic conditions that result in increased likelihood of behaviors associated with HIV transmission and help develop tailored intervention responses (*25*,*27*,*33*,*34*). In this analysis, limited significant superadditive interactions were found, although the majority were between structural syndemic conditions (e.g., superadditive interactions between experiencing homelessness and exchange sex on CAI prevalence among Black and White participants). These results underscore the importance of prioritizing HIV prevention interventions that address social determinants of health (e.g., housing and poverty) (*32*,*35*). Notably, the same combinations of syndemic conditions often resulted in a superadditive interaction for one racial and ethnic group and a subadditive interaction for another

TABLE 3. Adjusted prevalence ratios between syndemic conditions and between syndemic conditions and occurrence of condomless anal intercourse among transgender women,* overall and by racial and ethnic group† — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,§ United States, 2019–2020

	Syndemic condition						Outcome
	Incarceration	Homelessness	Exchange sex	Polydrug use	Sexual violence	Psychological distress	Condomless anal intercourse
Characteristic	aPR (95% CI)	aPR (95% CI)	aPR (95% CI)	aPR (95% CI)	aPR (95% CI)	aPR (95% CI)	aPR (95% CI)
Overall transgender women (N = 1,309)							
Incarceration	—¶	1.85 (1.67–2.06)**	1.29 (1.11– 1.50)**	1.66 (1.28– 2.15)**	1.59 (1.24– 2.05)**	1.15 (0.98– 1.36)	1.21 (1.13– 1.30)**
Homelessness	—	—	1.59 (1.38– 1.82)**	1.97 (1.48– 2.63)**	1.97 (1.55– 2.52)**	1.82 (1.58– 2.11)**	1.15 (1.04– 1.28)**
Exchange sex	—	—	—	2.68 (1.96– 3.66)**	2.94 (2.28– 3.79)**	1.29 (1.08– 1.54)**	1.60 (1.49– 1.71)**
Polydrug use	—	—	—	—	2.24 (1.79– 2.81)**	1.60 (1.36– 1.87)**	1.44 (1.33– 1.56)**
Sexual violence	—	—	—	—	—	1.67 (1.30– 2.14)**	1.39 (1.29– 1.50)**
Psychological distress	—	—	—	—	—	—	1.09 (1.01– 1.19)**
Black or African American transgender women (n = 530)††							
Incarceration	—	1.51 (1.26– 1.82)**	1.24 (1.00– 1.53)	1.72 (1.30– 2.27)**	1.18 (0.67– 2.08)§§	1.68 (1.22– 2.32)**	0.99 (0.81– 1.21)
Homelessness	—	—	1.56 (1.22– 2.00)**	1.72 (1.19– 2.47)**	1.83 (1.00– 3.37)§§	1.77 (1.37– 2.28)**	1.10 (0.93– 1.31)
Exchange sex	—	—	—	2.30 (1.48– 3.58)**	3.25 (1.83– 5.79)**,§§	1.37 (1.00– 1.88)**	1.60 (1.38– 1.86)**
Polydrug use	—	—	—	—	2.37 (1.37– 4.10)**,§§	1.45 (1.03– 2.05)**	1.30 (1.08– 1.56)**
Sexual violence	—	—	—	—	—	1.24 (0.68– 2.25)	1.23 (0.98– 1.56)
Psychological distress	—	—	—	—	—	—	1.02 (0.87– 1.21)
White transgender women (n = 168)††							
Incarceration	—	1.95 (1.53–2.48)**	2.61 (1.72–3.96)**	2.02 (1.37–2.98)**	2.54 (1.50–4.31)**,§§	1.45 (0.93–2.28)	1.96 (1.58–2.44)**
Homelessness	—	—	2.52 (1.27–4.99)**	2.63 (1.52–4.55)**	5.48 (2.08–14.43)**,§§	2.12 (1.39–3.22)**	1.62 (1.16–2.25)**
Exchange sex	—	—	—	3.34 (2.20–5.05)**	6.24 (2.95–13.19)**,§§	1.28 (0.82–2.01)	1.78 (1.33–2.39)**
Polydrug use	—	—	—	—	2.91 (1.79–4.73)**,§§	1.42 (1.02–1.98)**	2.15 (1.64–2.83)**
Sexual violence	—	—	—	—	—	1.49 (1.03–2.14)**	1.72 (1.35–2.20)**
Psychological distress	—	—	—	—	—	—	1.27 (0.96–1.68)
Hispanic or Latina transgender women (n = 611)††							
Incarceration	—	2.11 (1.78– 2.50)**	1.28 (1.05– 1.56)**	1.65 (1.07– 2.54)**	1.62 (1.12–2.35)**	0.88 (0.68– 1.14)	1.25 (1.13– 1.39)**
Homelessness	—	—	1.53 (1.30– 1.81)**	1.99 (1.35–2.94)**	1.67 (1.22–2.28)**	1.64 (1.35 1.99)**	1.13 (1.00– 1.28)**
Exchange sex	—	—	—	2.87 (2.02– 4.07)**	2.50 (1.64–3.82)**	1.15 (0.85– 1.54)	1.57 (1.43–1.72)**
Polydrug use	—	—	—	—	1.92 (1.44– 2.57)**	1.65 (1.35–2.00)**	1.44 (1.32–1.57)**
Sexual violence	—	—	—	—	—	1.84 (1.45–2.33)**	1.39 (1.27–1.52)**
Psychological distress	—	—	—	—	—	—	1.08 (1.00–1.18)

Abbreviation: aPR = adjusted prevalence ratio.

* N = 1,309 participants had an HIV-negative or HIV-positive National HIV Behavioral Surveillance HIV test result; identified as Black or African American, White, or Hispanic or Latina (Hispanic); and had no missing data.

† Models account for respondent-driven sampling method by clustering on recruitment chain and adjusting for urban area and network size. Models also control for age, education level, relationship status, health insurance, and National HIV Behavioral Surveillance HIV test result.

§ Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.

¶ Dashes indicate no results available.

** aPR statistically significant at p<0.05.

†† Persons of Hispanic origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.

§§ Models did not control for urban area because models did not converge.

racial and ethnic group. For example, a subadditive interaction between sexual violence and psychological distress was found among Hispanic participants, and a superadditive interaction was found among White participants. These differences in interaction results demonstrate the need to tailor syndemic interventions to racial and ethnic groups. Additional research is also needed to explore why interactions might differ across racial and ethnic groups.

Prevalence estimates for syndemic conditions differed by race and ethnicity. Psychosocial syndemic conditions were reported most frequently by White participants, which might be explained in multiple ways. First, polydrug use might be higher among White participants because the opioid epidemic disproportionately affects White persons (*36*). More research is needed to improve understanding of racial and ethnic differences in substance use among transgender women (*37*). Second, John Henryism might explain the lower levels of reported psychological distress among Black participants (*38*,*39*). John Henryism is a high-effort, active coping style often used by Black persons to deal with psychosocial and environmental stressors (*38*,*39*). Studies have found associations between John Henryism and increased physical health problems (e.g., hypertension) among Black residents of the United States, especially Black men (*38*,*40*). Certain studies have also found that John Henryism is associated with reduced reporting of mental health problems, although additional research is needed (*41*–*43*). Alternatively, another mental health measure (e.g., depressive symptoms) might better

TABLE 4. Adjusted prevalence ratio estimating the relation between syndemic score and occurrence of condomless anal intercourse,* by racial and ethnic group — National HIV Behavioral Surveillance Among Transgender Women,† seven urban areas,§ United States, 2019–2020

Characteristic	CAI aPR (95% CI)
Syndemic score¶	1.26 (1.18–1.33)**
Race and ethnicity††	
Black or African American	1.46 (1.10–1.93)**
White	Ref
Hispanic or Latina	1.57 (1.22–2.00)**
Syndemic score X Black or African American¶,††	0.91 (0.84–0.98)**
Syndemic score X Hispanic or Latina¶,††	0.92 (0.86–0.98)**
Slopes for effect of syndemic score on CAI††	
Black or African American	1.14 (1.09–1.18)**
White	1.26 (1.18–1.33)**
Hispanic or Latina	1.16 (1.13–1.18)**

Abbreviations: aPR = adjusted prevalence ratio; CAI = condomless anal intercourse; Ref = referent group.

* Models account for respondent-driven sampling method by clustering on recruitment chain and adjusting for urban area and network size. Models also control for age, education level, relationship status, health insurance, and National HIV Behavioral Surveillance HIV test result.

† N = 1,309 participants had an HIV-negative or HIV-positive National HIV Behavioral Surveillance HIV test result; identified as Black or African American, White, or Hispanic or Latina; and had no missing data.

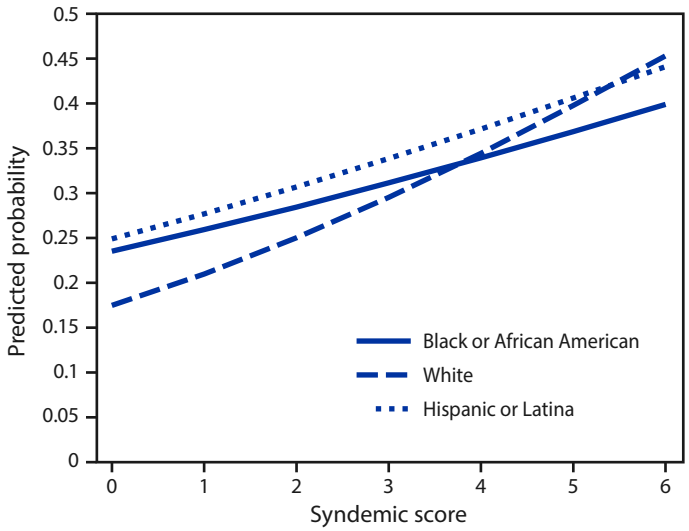
§ Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.

¶ An overall syndemic score (0–6) for each participant was calculated by summing reported syndemic conditions (e.g., homelessness, incarceration, exchange sex, polydrug use, sexual violence, and psychological distress).

** aPR statistically significant at p<0.05.

†† Persons of Hispanic or Latina (Hispanic) origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.

FIGURE 2. Estimated condomless anal intercourse as a function of syndemic score and race and ethnicity* for Black or African American, White, and Hispanic or Latina transgender women† — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,§ United States, 2019–2020



* Persons of Hispanic or Latina (Hispanic) origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.

† N = 1,309 participants had an HIV-negative or HIV-positive National HIV Behavioral Surveillance HIV test result; identified as Black or African American, White, or Hispanic or Latina; and had no missing data.

§ Atlanta, GA; Los Angeles, CA; New Orleans, LA, New York City, NY; Philadelphia, PA; San Francisco, CA, and Seattle, WA.

capture mental health problems affecting this population than does psychological distress. Other studies have had mixed results and found Black gender minority participants are at lower or equal risk for depression compared with White gender minority participants (*44*,*45*).

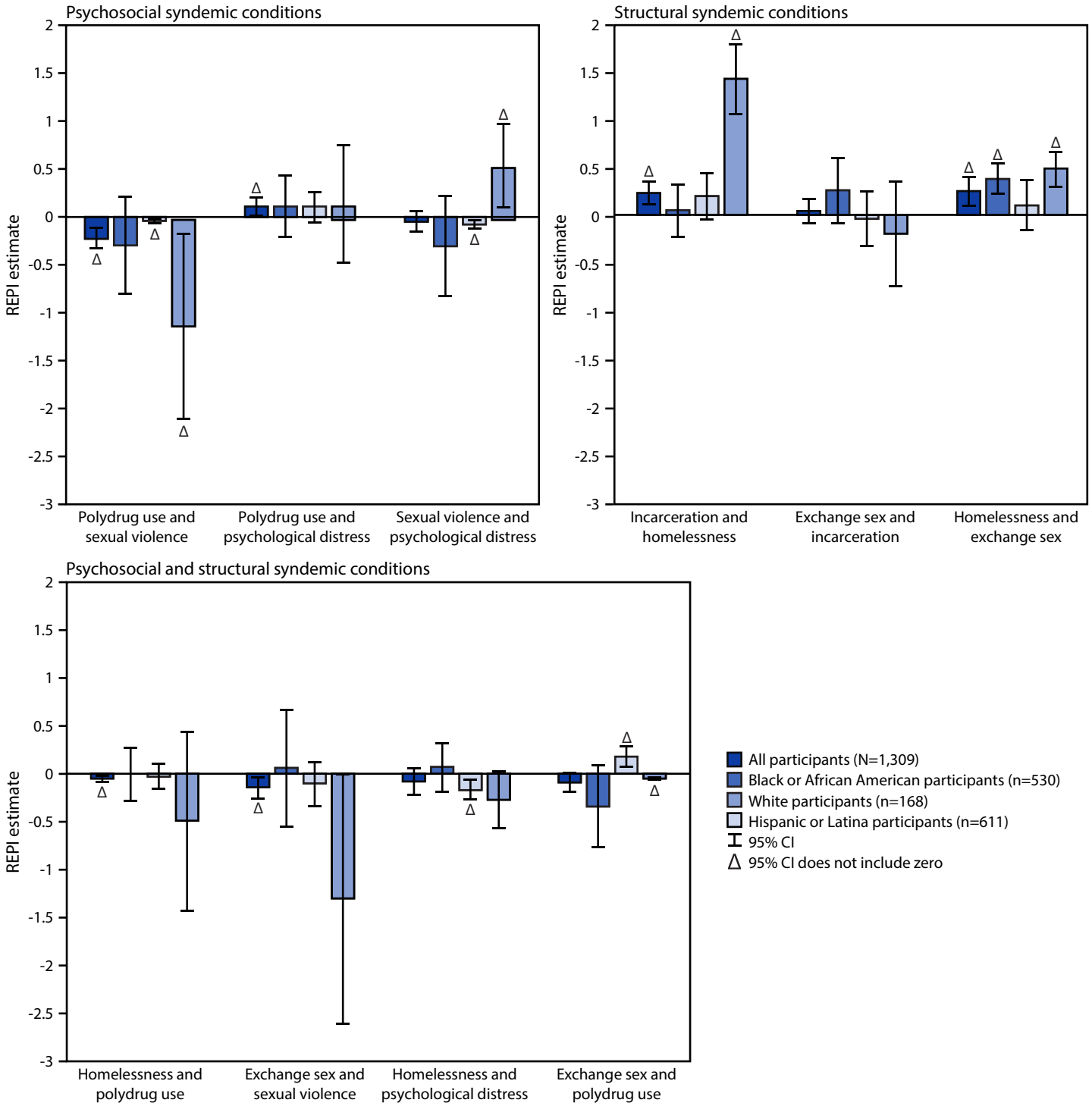
Racial and ethnic differences also were observed in reported structural syndemic conditions. Black and Hispanic participants reported higher levels of exchange sex and incarceration than White participants. The higher prevalence of exchange sex might be a result of more severe economic marginalization because of racial and ethnic discrimination (*13*), and the higher prevalence of incarceration is likely because of the disproportionate impact of mass incarceration on Black and Hispanic populations (*46*,*47*). However, structural and psychosocial syndemic conditions were prevalent across racial and ethnic groups, underscoring the importance of addressing syndemic conditions for all transgender women.

Findings differed by racial and ethnic group, highlighting the importance of assessing racial and ethnic differences in HIV prevention research among transgender women (*48*). Syndemic theory emphasizes that disparities in health outcomes or interactions between health outcomes are produced by social or environmental factors (*14*,*15*). Future syndemics research should consider including racial and ethnic discrimination measures and apply an intersectional framework to improve understanding on how social and environmental factors produce racial and ethnic disparities in syndemic conditions and behaviors associated with HIV transmission among transgender women (*44*,*49*–*52*). In addition, testing protective factors (e.g., resilience and social support) as effect modifiers might help explain racial and ethnic differences in associations between syndemic conditions and behaviors associated with HIV transmission (*6*).

Limitations

General limitations for NHBS-Trans are available in the overview and methodology report of this supplement (*17*). The findings in this report are subject to at least six additional limitations. First, temporality between syndemic conditions and between the syndemic conditions and CAI could not be assessed because of the cross-sectional study design and overlapping recall periods for measures. Nevertheless, both structural and psychosocial syndemic conditions were included in the analysis, which allowed for testing of

FIGURE 3. Relative excess prevalence owing to interaction on condomless anal intercourse estimates between syndemic conditions*,† — National HIV Behavioral Surveillance Among Transgender Women,§ seven urban areas,¶ United States, 2019–2023,††**



Abbreviations: CAI = condomless anal intercourse; REPI = relative excess prevalence owing to interaction.

* Models account for respondent-driven sampling methodology by clustering on recruitment chain and adjusting for urban area. Models also control for age, education level, relationship status, health insurance, and National HIV Behavioral Surveillance HIV test result.

† An REPI estimate >0 indicates superadditivity between syndemic conditions on CAI. A REPI estimate <0 indicates subadditivity effects between syndemic conditions on CAI.

§ Persons of Hispanic or Latina (Hispanic) origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.

¶ Atlanta, GA; Los Angeles, CA; New Orleans, LA, New York City, NY; Philadelphia, PA; San Francisco, CA, and Seattle, WA.

** REPI estimates with a 95% CI that does not include zero are marked with a triangle (Δ).

†† N = 1,309 participants had an HIV-negative or HIV-positive National HIV Behavioral Surveillance HIV test result; identified as Black or African American, White, or Hispanic or Latina; and had no missing data.

additive interactions between structural syndemic conditions, psychosocial syndemic conditions, and structural and psychosocial syndemic conditions on CAI prevalence. Second, the sample is not representative of transgender women residing outside of the seven urban areas. Because transgender women are hard to reach, the data might not be representative of all transgender women residing in the seven urban areas. However, data were collected from multiple diverse urban areas using a robust, standardized surveillance system (*2*). Third, the sample size differed by racial and ethnic group and was most limited among White participants, which likely influenced the precision of parameter estimates and might have reduced power to detect associations. Nonetheless, Black and Hispanic populations disproportionately affected by HIV were over sampled, allowing for a stratified analysis to examine racial and ethnic differences in associations between syndemic conditions and CAI (*2*). Fourth, participants may have been at low or minimal risk of acquiring or transmitting HIV through CAI if they were taking preexposure prophylaxis or HIV treatment medication as prescribed; whether participants with HIV had an undetectable viral load or participants without HIV had full protection from taking preexposure prophylaxis every time they had CAI could not be determined. Fifth, multiple comparisons were not adjusted, increasing the likelihood of type I errors when assessing independent associations between syndemic conditions and between syndemic conditions and CAI. Finally, all measures except for NHBS HIV test result were self-reported, which might be subject to social desirability bias and result in underreporting of syndemic conditions and CAI (*53–55*).

Conclusions

Because of the high prevalence of syndemic conditions and CAI, culturally sensitive HIV prevention and behavioral, biomedical, and structural interventions for transgender women are urgently needed (*10,11,32*). HIV behavioral interventions addressing risks associated with certain sexual behaviors, mental health symptoms, and substance use for transgender women have reduced behaviors associated with HIV transmission (*56–60*). Although limited, behavioral interventions designed to address psychosocial and structural syndemic conditions (e.g., homelessness, legal employment and income, and mental health symptoms among transgender women) also have indicated promising reductions in behaviors associated with HIV transmission (*35*,*61–63*). Findings indicated differences in prevalence of syndemic conditions and interactions between syndemic conditions on CAI by racial and ethnic group, suggesting that syndemic-focused interventions for transgender women should be tailored to racial and ethnic groups. Results indicate that syndemic-focused interventions for Black transgender women should address the intersection between experiencing homelessness and exchange sex; those for Hispanic transgender women should address the intersection between exchange sex and polydrug use; and those for White transgender women should address the intersections between sexual violence and psychological distress, incarceration and experiencing homelessness, and experiencing homelessness and exchange sex. Culturally tailored syndemic-focused interventions that offer comprehensive services addressing social and structural barriers to status-neutral HIV services might be effective (*64*,*65*). For example, interventions designed for transgender women of color with HIV infection have increased engagement in HIV care by offering patient navigation or case management, housing and employment assistance, mental health services, and substance use services (*65*). Although HIV behavioral interventions have proven efficacy among transgender women, multilevel interventions are also critical to reduce gender-identity–related and racial- and ethnic–related stigma and discrimination and increase access to pre-exposure prophylaxis, HIV treatment, and gender-affirming medical care (*32*,*66*).

National HIV Behavioral Surveillance Among Transgender Women Study Group

Narquis Barak, CrescentCare; Kathleen A. Brady, Philadelphia Department of Public Health; Sarah Braunstein, New York City Department of Health and Mental Hygiene; Jasmine Davis, CrescentCare; Sara Glick, University of Washington, School of Medicine, Division of Allergy and Infectious Diseases, Public Health – Seattle & King County, HIV/STD Program; Andrea Harrington, Philadelphia Department of Public Health; Jasmine Lopez, New York City Department of Health and Mental Hygiene; Yingbo Ma, Los Angeles County Department of Public Health; Aleks Martin, Public Health – Seattle & King County, HIV/STD Program; Genetha Mustaafaa, Georgia Department of Public Health; Tanner Nassau, Philadelphia Department of Public Health; Gia Olaes, Los Angeles County Department of Public Health; Jennifer Reuer, Washington State Department of Health; Alexis Rivera, New York City Department of Health and Mental Hygiene; William T. Robinson, Louisiana State University Health Science Center in New Orleans – School of Public Health, Louisiana Office of Public Health STD/HIV/Hepatitis Program; Ekow Kwa *Sey*, Los Angeles County Department of Public Health; Sofia Sicro, San Francisco Department of Public Health; Brittany Taylor, Georgia Department of Public Health; Dillon Trujillo, San Francisco Department of Public Health; Erin Wilson, San Francisco Department of Public Health; Pascale Wortley, Georgia Department of Public Health.

Conflicts of Interest

All authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. No potential conflicts of interest were disclosed.

References

1. Becasen JS, Denard CL, Mullins MM, Higa DH, Sipe TA. Estimating the prevalence of HIV and sexual behaviors among the U.S. transgender population: a systematic review and meta-analysis, 2006–2017. Am J Public Health 2019;109:e1–8. PMID:30496000 https://doi.org/10.2105/AJPH.2018.304727
2. CDC. HIV infection, risk, prevention, and testing behaviors among transgender women—National HIV Behavioral Surveillance, 7 U.S. cities, 2019–2020. Atlanta, GA: US Department of Health and Human Services, CDC; 2021.
3. Brennan J, Kuhns LM, Johnson AK, Belzer M, Wilson EC, Garofalo R; Adolescent Medicine Trials Network for HIV/AIDS Interventions. Syndemic theory and HIV-related risk among young transgender women: the role of multiple, co-occurring health problems and social marginalization. Am J Public Health 2012;102:1751–7. PMID:22873480 https://doi.org/10.2105/AJPH.2011.300433
4. Mimiaga MJ, Hughto JMW, Biello KB, et al. Longitudinal analysis of syndemic psychosocial problems predicting HIV risk behavior among a multicity prospective cohort of sexually active young transgender women in the United States. J Acquir Immune Defic Syndr 2019;81:184–92. PMID:30839380 https://doi.org/10.1097/QAI.0000000000002009
5. Parsons JT, Antebi-Gruszka N, Millar BM, Cain D, Gurung S. Syndemic conditions, HIV transmission risk behavior, and transactional sex among transgender women. AIDS Behav 2018;22:2056–67. PMID:29589136 https://doi.org/10.1007/s10461-018-2100-y
6. Teixeira da Silva D, Bouris A, Voisin D, Hotton A, Brewer R, Schneider J. Social networks moderate the syndemic effect of psychosocial and structural factors on HIV risk among young black transgender women and men who have sex with men. AIDS Behav 2020;24:192–205. PMID:31289985 https://doi.org/10.1007/s10461-019-02575-9
7. Wilson EC, Chen YH, Arayasirikul S, et al. Differential HIV risk for racial/ethnic minority trans*female youths and socioeconomic disparities in housing, residential stability, and education. Am J Public Health 2015;105(Suppl 3):e41–7. PMID:25905826 https://doi.org/10.2105/AJPH.2014.302443
8. Eastwood EA, Nace AJ, Hirshfield S, Birnbaum JM. Young transgender women of color: homelessness, poverty, childhood sexual abuse and implications for HIV care. AIDS Behav 2021;25(Suppl 1):96–106. PMID:31865517 https://doi.org/10.1007/s10461-019-02753-9
9. Gilbert L, Raj A, Hien D, Stockman J, Terlikbayeva A, Wyatt G. Targeting the SAVA (substance abuse, violence, and AIDS) syndemic among women and girls: a global review of epidemiology and integrated interventions. J Acquir Immune Defic Syndr 2015;69(Suppl 2):S118–27. PMID:25978478 https://doi.org/10.1097/QAI.0000000000000626
10. Poteat T, Reisner SL, Radix A. HIV epidemics among transgender women. Curr Opin HIV AIDS 2014;9:168–73. PMID:24322537 https://doi.org/10.1097/COH.0000000000000030
11. Poteat T, Scheim A, Xavier J, Reisner S, Baral S. Global epidemiology of HIV infection and related syndemics affecting transgender people. J Acquir Immune Defic Syndr 2016;72(Suppl 3):S210–9. PMID:27429185 https://doi.org/10.1097/QAI.0000000000001087
12. Reisner SL, Poteat T, Keatley J, et al. Global health burden and needs of transgender populations: a review. Lancet 2016;388:412–36. PMID:27323919 https://doi.org/10.1016/S0140-6736(16)00684-X
13. Arrington-Sanders R, Alvarenga A, Galai N, et al. Social determinants of transactional sex in a sample of young Black and Latinx sexual minority cisgender men and transgender women. J Adolesc Health 2022;70:275–81. PMID:34580030 https://doi.org/10.1016/j.jadohealth.2021.08.002
14. Singer M. AIDS and the health crisis of the U.S. urban poor; the perspective of critical medical anthropology. Soc Sci Med 1994;39:931–48. PMID:7992126 https://doi.org/10.1016/0277-9536(94)90205-4
15. Singer MC, Erickson PI, Badiane L, et al. Syndemics, sex and the city: understanding sexually transmitted diseases in social and cultural context. Soc Sci Med 2006;63:2010–21. PMID:16782250 https://doi.org/10.1016/j.socscimed.2006.05.012
16. Poteat T, Malik M, Wirtz AL, Cooney EE, Reisner S. Understanding HIV risk and vulnerability among cisgender men with transgender partners. Lancet HIV 2020;7:e201–8. PMID:32032535 https://doi.org/10.1016/S2352-3018(19)30346-7
17. Kanny D, Lee K, Olansky E, et al. Overview and methodology of the National HIV Behavioral Surveillance among Transgender Women—seven urban areas, United States, 2019–2020. In: National HIV Behavioral Surveillance Among Transgender Women—seven urban areas, United States, 2019–2020. MMWR Suppl 2024;73(No. Suppl-1):1–8.
18. Kessler RC, Andrews G, Colpe LJ, et al. Short screening scales to monitor population prevalences and trends in non-specific psychological distress. Psychol Med 2002;32:959–76. PMID:12214795 https://doi.org/10.1017/S0033291702006074
19. Kessler RC, Barker PR, Colpe LJ, et al. Screening for serious mental illness in the general population. Arch Gen Psychiatry 2003;60:184–9. PMID:12578436 https://doi.org/10.1001/archpsyc.60.2.184
20. Almazan AN, Keuroghlian AS. Association between gender-affirming surgeries and mental health outcomes. JAMA Surg 2021;156:611–8. PMID:33909023 https://doi.org/10.1001/jamasurg.2021.0952
21. Kisler KA, Fletcher JB, Fehrenbacher AE, Reback CJ. Age is associated with HIV sexual risk behaviors among trans women in Los Angeles County. AIDS Educ Prev 2021;33:483–94. PMID:34874757 https://doi.org/10.1521/aeap.2021.33.6.483
22. VanderWeele TJ, Knol MJ. A tutorial on interaction. Epidemiol Methods 2014;3:33–72. https://doi.org/10.1515/em-2013-0005
23. Richardson DB, Kaufman JS. Estimation of the relative excess risk due to interaction and associated confidence bounds. Am J Epidemiol 2009;169:756–60. PMID:19211620 https://doi.org/10.1093/aje/kwn411
24. Hosmer DW, Lemeshow S. Confidence interval estimation of interaction. Epidemiology 1992;3:452–6. PMID:1391139 https://doi.org/10.1097/00001648-199209000-00012
25. Jiang H, Li J, Tan Z, et al. Syndemic factors and HIV risk among men who have sex with men in Guangzhou, China: evidence from synergy and moderated analyses. Arch Sex Behav 2020;49:311–20. PMID:31617111 https://doi.org/10.1007/s10508-019-01488-x
26. Lee K, Hutton HE, Lesko CR, et al. Associations of drug use, violence, and depressive symptoms with sexual risk behaviors among women with alcohol misuse. Womens Health Issues 2018;28:367–74. PMID:29784276 https://doi.org/10.1016/j.whi.2018.04.004
27. Tomori C, McFall AM, Solomon SS, et al. Is there synergy in syndemics? Psychosocial conditions and sexual risk among men who have sex with men in India. Soc Sci Med 2018;206:110–6. PMID:29615297 https://doi.org/10.1016/j.socscimed.2018.03.032
28. Anderson-Carpenter KD, Fletcher JB, Reback CJ. Associations between methamphetamine use, housing status, and incarceration rates among men who have sex with men and transgender women. J Drug Issues 2017;47:383–95. PMID:28670005 https://doi.org/10.1177/0022042617696917
29. Fletcher JB, Kisler KA, Reback CJ. Housing status and HIV risk behaviors among transgender women in Los Angeles. Arch Sex Behav 2014;43:1651–61. PMID:25190499 https://doi.org/10.1007/s10508-014-0368-1
30. Rothman KJ, Greenland S, Lash TL. Modern epidemiology. 3rd ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2008.
31. Zou G. A modified poisson regression approach to prospective studies with binary data. Am J Epidemiol 2004;159:702–6. PMID:15033648 https://doi.org/10.1093/aje/kwh090

32. Poteat T, Malik M, Scheim A, Elliott A. HIV prevention among transgender populations: knowledge gaps and evidence for action. Curr HIV/AIDS Rep 2017;14:141–52. PMID:28752285 https://doi.org/10.1007/s11904-017-0360-1
33. Tsai AC, Burns BF. Syndemics of psychosocial problems and HIV risk: a systematic review of empirical tests of the disease interaction concept. Soc Sci Med 2015;139:26–35. PMID:26150065 https://doi.org/10.1016/j.socscimed.2015.06.024
34. Tsai AC, Venkataramani AS. Syndemics and health disparities: a methodological note. AIDS Behav 2016;20:423–30. PMID:26662266 https://doi.org/10.1007/s10461-015-1260-2
35. Hill BJ, Motley DN, Rosentel K, et al. Employment as HIV prevention: an employment support intervention for adolescent men who have sex with men and adolescent transgender women of color. J Acquir Immune Defic Syndr 2022;91:31–8. PMID:35551157 https://doi.org/10.1097/QAI.0000000000003020
36. Restar AJ, Jin H, Ogunbajo A, et al. Prevalence and risk factors of nonmedical prescription opioid use among transgender girls and young women. JAMA Netw Open 2020;3:e201015. PMID:32176305 https://doi.org/10.1001/jamanetworkopen.2020.1015
37. Ruppert R, Kattari SK, Sussman S. Review: prevalence of addictions among transgender and gender diverse subgroups. Int J Environ Res Public Health 2021;18:8843. PMID:34444595 https://doi.org/10.3390/ijerph18168843
38. Bennett GG, Merritt MM, Sollers JJ III, et al. Stress, coping, and health outcomes among African-Americans: a review of the John Henryism hypothesis. Psychol Health 2004;19:369–83. https://doi.org/10.1080/0887044042000193505
39. James SA. John Henryism and the health of African-Americans. Cult Med Psychiatry 1994;18:163–82. PMID:7924399 https://doi.org/10.1007/BF01379448
40. Felix AS, Shisler R, Nolan TS, et al. High-effort coping and cardiovascular disease among women: a systematic review of the John Henryism hypothesis. J Urban Health 2019;96(Suppl 1):12–22. PMID:30506136 https://doi.org/10.1007/s11524-018-00333-1
41. Robinson MN, Thomas Tobin CS. Is John Henryism a health risk or resource? Exploring the role of culturally relevant coping for physical and mental health among Black Americans. J Health Soc Behav 2021;62:136–51. PMID:34100655 https://doi.org/10.1177/00221465211009142
42. Bronder EC, Speight SL, Witherspoon KM, Thomas AJ. John Henryism, depression, and perceived social support in Black women. J Black Psychol 2014;40:115–37. https://doi.org/10.1177/0095798412474466
43. Kiecolt KJ, Hughes M, Keith VM. Can a high sense of control and John Henryism be bad for mental health? Sociol Q 2009;50:693–714. https://doi.org/10.1111/j.1533-8525.2009.01152.x
44. Lett E, Dowshen NL, Baker KE. Intersectionality and health inequities for gender minority Blacks in the U.S. Am J Prev Med 2020;59:639–47. PMID:32792281 https://doi.org/10.1016/j.amepre.2020.04.013
45. Brown GR, Jones KT. Racial health disparities in a cohort of 5,135 transgender veterans. J Racial Ethn Health Disparities 2014;1:257–66. https://doi.org/10.1007/s40615-014-0032-4
46. Reisner SL, Bailey Z, Sevelius J. Racial/ethnic disparities in history of incarceration, experiences of victimization, and associated health indicators among transgender women in the U.S. Women Health 2014;54:750–67. PMID:25190135 https://doi.org/10.1080/03630242.2014.932891
47. Wildeman C, Wang EA. Mass incarceration, public health, and widening inequality in the USA. Lancet 2017;389:1464–74. PMID:28402828 https://doi.org/10.1016/S0140-6736(17)30259-3
48. del Río-González AM, Lameiras-Fernández M, Modrakovic D, et al. Global scoping review of HIV prevention research with transgender people: transcending from trans-subsumed to trans-centred research. J Int AIDS Soc 2021;24:e25786. PMID:34473421 https://doi.org/10.1002/jia2.25786
49. Biello KB, Hughto JMW. Measuring intersectional stigma among racially and ethnically diverse transgender women: challenges and opportunities. Am J Public Health 2021;111:344–6. PMID:33566645 https://doi.org/10.2105/AJPH.2020.306141
50. Wesson P, Vittinghoff E, Turner C, Arayasirikul S, McFarland W, Wilson E. Intercategorical and intracategorical experiences of discrimination and HIV prevalence among transgender women in San Francisco, CA: a quantitative intersectionality analysis. Am J Public Health 2021;111:446–56. PMID:33476238 https://doi.org/10.2105/AJPH.2020.306055
51. Wesp LM, Malcoe LH, Elliott A, Poteat T. Intersectionality research for transgender health justice: a theory-driven conceptual framework for structural analysis of transgender health inequities. Transgend Health 2019;4:287–96. PMID:31663035 https://doi.org/10.1089/trgh.2019.0039
52. Smith LR, Patel VV, Tsai AC, et al. Integrating intersectional and syndemic frameworks for ending the U.S. HIV epidemic. Am J Public Health 2022;112(S4):S340–3. PMID:35763739 https://doi.org/10.2105/AJPH.2021.306634
53. Latkin CA, Edwards C, Davey-Rothwell MA, Tobin KE. The relationship between social desirability bias and self-reports of health, substance use, and social network factors among urban substance users in Baltimore, Maryland. Addict Behav 2017;73:133–6. PMID:28511097 https://doi.org/10.1016/j.addbeh.2017.05.005
54. Perinelli E, Gremigni P. Use of social desirability scales in clinical psychology: a systematic review. J Clin Psychol 2016;72:534–51. PMID:26970350 https://doi.org/10.1002/jclp.22284
55. Rao A, Tobin K, Davey-Rothwell M, Latkin CA. Social desirability bias and prevalence of sexual HIV risk behaviors among people who use drugs in Baltimore, Maryland: implications for identifying individuals prone to underreporting sexual risk behaviors. AIDS Behav 2017;21:2207–14. PMID:28509997 https://doi.org/10.1007/s10461-017-1792-8
56. Bockting WO, Robinson BE, Forberg J, Scheltema K. Evaluation of a sexual health approach to reducing HIV/STD risk in the transgender community. AIDS Care 2005;17:289–303. PMID:15832877 https://doi.org/10.1080/09540120412331299825
57. Garofalo R, Johnson AK, Kuhns LM, Cotten C, Joseph H, Margolis A. Life skills: evaluation of a theory-driven behavioral HIV prevention intervention for young transgender women. J Urban Health 2012;89:419–31. PMID:22223033 https://doi.org/10.1007/s11524-011-9638-6
58. Nemoto T, Operario D, Keatley J, Nguyen H, Sugano E. Promoting health for transgender women: Transgender Resources and Neighborhood Space (TRANS) program in San Francisco. Am J Public Health 2005;95:382–4. PMID:15727962 https://doi.org/10.2105/AJPH.2004.040501
59. Taylor RD, Bimbi DS, Joseph HA, Margolis AD, Parsons JT. Girlfriends: evaluation of an HIV-risk reduction intervention for adult transgender women. AIDS Educ Prev 2011;23:469–78. PMID:22010810 https://doi.org/10.1521/aeap.2011.23.5.469
60. Garofalo R, Kuhns LM, Reisner SL, Biello K, Mimiaga MJ. Efficacy of an empowerment-based, group-delivered HIV prevention intervention for young transgender women: the Project LifeSkills randomized clinical trial. JAMA Pediatr 2018;172:916–23. PMID:30105381 https://doi.org/10.1001/jamapediatrics.2018.1799
61. Reback CJ, Clark K, Fletcher JB. TransAction: a homegrown, theory-based, HIV risk reduction intervention for transgender women experiencing multiple health disparities. Sex Res Soc Policy 2019;16:408–18. PMID:33133300 https://doi.org/10.1007/s13178-018-0356-7

62. Reback CJ, Shoptaw S, Downing MJ. Prevention case management improves socioeconomic standing and reduces symptoms of psychological and emotional distress among transgender women. AIDS Care 2012;24:1136–44. PMID:22670654 https://doi.org/10.1080/09540121.2012.687817
63. Martinez O, Lopez N, Woodard T, Rodriguez-Madera S, Icard L. Transhealth Information Project: a peer-led HIV prevention intervention to promote HIV protection for individuals of transgender experience. Health Soc Work 2019;44:104–12. PMID:30855670 https://doi.org/10.1093/hsw/hlz008
64. Goldhammer H, Marc LG, Psihopaidas D, et al. HIV care continuum interventions for transgender women: a topical review. Public Health Rep 2023;138:19–30. PMID:35060802 https://doi.org/10.1177/00333549211065517
65. Rebchook GM, Chakravarty D, Xavier JM, et al.; SPNS Transgender Women of Color Study Group. An evaluation of nine culturally tailored interventions designed to enhance engagement in HIV care among transgender women of colour in the United States. J Int AIDS Soc 2022;25(Suppl 5):e25991. PMID:36225153 https://doi.org/10.1002/jia2.25991
66. Gamarel KE, Rebchook G, McCree BM, et al. The ethical imperative to reduce HIV stigma through community-engaged, status-neutral interventions designed with and for transgender women of colour in the United States. J Int AIDS Soc 2022;25(Suppl 1):e25907. PMID:35818894 https://doi.org/10.1002/jia2.25907

Nonprescription Hormone Use Among Transgender Women — National HIV Behavioral Surveillance Among Transgender Women, Seven Urban Areas, United States, 2019–2020

Evelyn Olansky, MPH[1,2,3]; Kathryn Lee, MPH[3]; Senad Handanagic, MD, MPH[3]; Lindsay Trujillo, MPH[1,2,3]; National HIV Behavioral Surveillance among Transgender Women Study Group

[1]Social & Scientific Systems, Inc., Silver Spring, Maryland; [2]ICF, Fairfax, Virginia; [3]Division of HIV Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, CDC, Atlanta, Georgia

Abstract

Certain transgender women who seek gender-affirming hormone treatment (GAHT) face economic and social barriers that limit or prevent access to medically supervised GAHT. Transgender women facing such barriers might acquire GAHT without prescription, potentially without proper dosage, administration, and health monitoring in the absence of medical supervision. For this report, survey data were analyzed from 1,165 transgender women in seven urban areas in the United States to examine associations between self-reported use of nonprescription GAHT and known correlates of nonprescription GAHT, including cost, insurance coverage for GAHT, homelessness, receiving money or drugs in exchange for sex during the past 12 months (exchange sex), lack of comfort discussing gender with provider, and lack of health care use. After controlling for complex sampling design, transgender women who reported recent health care use or insurance coverage for GAHT were less likely to report nonprescription GAHT, and those reporting recent exchange sex or recent homelessness were more likely to report nonprescription GAHT. Findings suggest that transgender women were more likely to use GAHT without a prescription in situations of economic and social marginalization (e.g., disengagement from health care, lack of insurance or trans-specific health care, homelessness, or engagement in sex work). Public health professionals can use these results to design effective interventions to facilitate prescribed hormone use among transgender women in the United States, although access to housing, trans-affirming health care, and insurance coverage might be needed to prevent nonprescription use.

Introduction

Certain transgender women receive or desire gender-affirming hormone treatment (GAHT) (*1*), initiation of which is associated with higher quality of life (*2*,*3*), decreased depression (*3*), and reduced HIV treatment interruptions (*4*) among transgender women. Although hormone treatment is known to be safe and effective when obtained from a health care professional (*5*), certain transgender women use hormones without a prescription (*1*,*6*,*7*). Although masculinizing GAHT is a Schedule III controlled substance, feminizing GAHT is not a scheduled or controlled substance, but it is not approved by the Food and Drug Administration for over-the-counter use, leaving those seeking non-prescription feminizing GAHT uncertain if what they are doing is punishable by law. Side effects and health risks associated with GAHT among transgender women include ischemic heart disease and hypertension (*8*). Although GAHT prescribers can monitor and manage potential side effects among their patients, transgender women who use nonprescription hormones might be unaware of the potential side effects, unaware of proper dosage, or unable to prevent or manage adverse effects. Because of the potential risks, it is important to understand potential factors associated with nonprescription hormone use and identify possible barriers to safe, medically monitored GAHT. Such data can be used to guide development of interventions or policy changes that reduce nonprescription use of hormones among transgender women.

Among convenience samples of transgender women, correlates of nonprescription hormone use are typically based on studies in a single state, city, or clinical population. Although limited, previous studies suggest that nonprescription hormone use is correlated with lacking health insurance (*1*), experiencing homelessness (*9*) and a history of receiving money or drugs in exchange for sex during the past 12 months (hereafter, exchange sex) (*10*). These findings suggest that where nonprescription hormone use occurs, barriers to needed resources (e.g., housing and licit income) and barriers to affordable health care services are more likely to be present. This analysis explored demographic, health care, and economic correlates of nonprescription hormone use

Corresponding author: Evelyn J Olansky, Behavioral and Clinical Surveillance Branch, Division of HIV Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, CDC. Telephone: 404-639-6438; Email: ism9@cdc.gov.

among transgender women in seven urban areas in the United States who participated in CDC's National HIV Behavioral Surveillance Among Transgender Women (NHBS-Trans). Understanding the correlates of nonprescription hormone use, particularly those within the purview of public health policy, such as health insurance coverage and health care access, might facilitate prescribed use of GAHT and prevent the risks associated with nonprescription GAHT use. Conversely, recent nonprescription GAHT use might be a useful indicator of barriers to health care among transgender women who use or desire to use hormones.

Methods

Data Source

This report includes survey data from NHBS-Trans conducted by CDC during June 2019–February 2020 to assess behavioral risk factors, PrEP, antiretroviral therapy, condom use, and HIV prevalence. Eligible participants completed an interviewer-administered questionnaire and were offered HIV testing. Additional information about NHBS-Trans eligibility criteria, data collection, and biologic testing is available in the overview and methodology report of this supplement (*11*). The NHBS-Trans protocol questionnaire and documentation are available at https://www.cdc.gov/hiv/statistics/systems/nhbs/methods-questionnaires.html#trans.

Applicable local institutional review boards in each participating project area approved NHBS-Trans activities. The final NHBS-Trans sample included 1,608 transgender women in seven urban areas in the United States (Atlanta, Georgia; Los Angeles, California; New Orleans, Louisiana; New York, New York; Philadelphia, Pennsylvania; San Francisco, California; and Seattle, Washington) recruited by using respondent-driven sampling (RDS) This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable federal law and CDC policy.

Participants were included in this analysis if they reported current or recent (during the past 12 months) hormone use and provided responses to questions about age, poverty, network size, insurance coverage, and access to transgender-specific health care (n = 1,165). The analysis excluded participants who did not use hormones during the past 12 months (the recall period for nonprescription hormone use and other NHBS-Trans measures) to avoid conflating participants with insurmountable barriers to hormone use and those not using hormones for other reasons.*

* 45 C.F.R. part 46.102(l)(2), 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.

Measures

Assessed demographic characteristics included age group (18–29, 30–39, 40–49, and ≥50 years) and education (less than high school, high school, some college or technical degree, and college degree or more). Other characteristics assessed included transgender-specific health insurance coverage, transgender-specific health care (as measured by ever having a health care provider with whom they felt comfortable discussing gender-related health issues), current hormone use, hormone use during the past 12 months, visiting a health care provider during the past 12 months, current or recent homelessness, recent sex work, and use of nonprescription hormones during the past 12 months (Table 1).

TABLE 1. Variables, measures, and analytic coding — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,* United States, 2019–2020

Variable	Question	Analytic coding
Transgender-specific health insurance coverage	Do you currently have health insurance or health care coverage? Does your current health insurance cover hormones for gender transition or affirmation?	Yes (current health insurance coverage covers hormones for gender transition or affirmation) or no (no current health insurance coverage, or current health insurance coverage does not cover hormones for gender transition or affirmation)
Transgender-specific health care	Do you have a health care provider with whom you feel comfortable discussing gender-related health issues? Have you ever had a health care provider with whom you felt comfortable discussing gender-related health issues?	Yes (currently or ever had a health care provider with whom you feel comfortable discussing gender-related health issues) or no (Have never had a health care provider with whom you feel comfortable discussing gender-related health issues).
Current hormone use	Are you currently taking hormones for gender transition or affirmation?	Yes or no (among those reporting lifetime hormone use)
Recent hormone use	In the past 12 months, have you used hormones for gender transition or affirmation?	Yes or no (among those reporting lifetime hormone use)
Recent nonprescription hormone use	In the past 12 months, have you used hormones that were not prescribed to you by a doctor or other health care professional?	Yes or No (among those reporting recent or current hormone use)

* Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.

Analysis

Log-linked Poisson regression with generalized estimating equations were used to examine the association between nonprescription hormone use and social and structural factors related to health care access. Bivariate Poisson regression was performed to identify factors associated with recent use of nonprescription hormones. Respondent-driven sampling methodology and network effects were accounted for by clustering on recruitment chain, urban area, and self-reported network size; results are reported as adjusted prevalence ratios with 95% CIs. Variables significant ($p<0.05$) in bivariate analyses were carried forward to a multivariate model, and variables that remained significant ($p<0.05$) in multivariate analysis were included in the final model. Analyses were performed using SAS software (version 9.4; SAS Institute).

Results

Among the 1,165 transgender women who reported any hormone use during the past 12 months, 91.7% reported current hormone use. Among transgender women who used hormones during the past 12 months, transgender women aged 40–49 years (9.7%) and aged ≥50 years (16.1%) were significantly less likely than transgender women aged 18–29 years (22.8%) to report nonprescription hormone use (Table 2). Transgender women not recently visiting a health care provider (47.1%), lacking transgender-specific health insurance coverage (38.4%), lacking access to transgender-specific health care (36.0%), and not currently using hormones (35.1%) were more likely to report nonprescription hormone use compared with transgender women who had not experienced these health care challenges. Transgender women who experienced current or recent homelessness were significantly more likely to report nonprescription hormone use (27.6%) than those who had not experienced homelessness (13.9%). Transgender women who reported recent exchange sex were significantly more likely to report nonprescription hormone use (28.8%) than those who did not report recent exchange sex (15.1%). Despite the observed associations between nonprescription hormone use and economically tenuous circumstances (e.g., homelessness and exchange sex), no significant association was observed between nonprescription hormone use and poverty (at or below the poverty level as measured by the 2019 Federal poverty level). After controlling for age, education, RDS, and urban area, use of nonprescription hormones was more common than use of only prescription hormones among transgender women who did not have transgender-specific health insurance coverage, who did not visit a health care provider recently, who experienced current or recent homelessness, and who reported recent exchange sex (Table 3).

Discussion

Among transgender women who reported current or recent use of hormones, nonprescription hormone use was associated with conditions of economic hardship (e.g., current or recent experience of homelessness or sex work) and limited access to health care (e.g., lacking health insurance coverage for hormonal treatment and not visiting a health care provider during the past 12 months). Transgender women who used hormones without transgender-specific health insurance coverage were more than twice as likely to use nonprescription hormones than transgender women who used hormones and had transgender-specific health insurance coverage. Transgender women whose engagement in health care is infrequent, such as among those who have not received medical care in more than 12 months, were also significantly more likely to report use of nonprescription hormones. Transgender women aged >40 years were significantly less likely than transgender women aged 18–29 years to report use of nonprescription hormones, although those differences were not significant when controlling for covariates.

Although economic marginalization appears to be the primary driver for use of nonprescription hormones, the association might be influenced by additional factors. Notably, no association was observed between use of nonprescription hormones and reported income below the 2019 Federal poverty level. A lack of transgender-specific health insurance coverage or a lack of recent engagement with a health care provider poses clear logistical barriers to accessing prescribed hormones because it is difficult to maintain a prescription without engaging with a provider and expensive to maintain a prescription that is not covered by health insurance. Although the findings in this report suggest that transgender women recently experiencing homelessness or exchange sex face many barriers to accessing prescription hormones, the nature of those barriers might be more complex and difficult to interpret than barriers such as lack of insurance coverage and lack of recent health care engagement. Challenges associated with experiencing homelessness, such as difficulty contacting and physically accessing health care (*12*), or challenges associated with sex exchange, such as fear of discrimination or stigma in health care settings (*13*), might explain the observed associations between prescription and nonprescription hormone use by experiencing homelessness or sex work. Future studies should examine additional factors in health care access that might be mediated by experiencing homelessness or exchange sex, such as access to transportation, methods of contacting providers, or anticipated stigma.

Despite previous findings suggesting that medical mistrust and anticipated mistreatment are key factors for transgender

TABLE 2. Number and percentage of transgender women receiving nonprescription gender-affirming hormone treatment, by selected characteristics — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,* United States, 2019–2020†

Characteristic	Total (N = 1,165) No.	Recent§ onprescription gender-affirming hormone treatment No. (%)	Independent association with nonprescription gender-affirming hormone treatment¶ PR	(95% CI)
Overall	**1,165**	**230 (19.7)**	—	—
Age group, yrs				
18–29	**364**	83 (22.8)	Ref	—
30–39	**330**	86 (26.1)	1.15	(0.87–1.51)
40–49	**228**	22 (9.7)	0.42	(0.31–0.58) **
≥50	**242**	39 (16.1)	0.73	(0.54–0.98) **
Education				
<high school	**244**	47 (19.3)	Ref	—
High school	**439**	91 (20.7)	1.08	(0.84–1.39)
Some college or technical degree	**353**	71 (20.1)	1.05	(0.76–1.44)
College degree or more	**129**	21 (16.3)	0.88	(0.58–1.33)
Health care access				
Transgender-specific health insurance coverage**				
Yes	**925**	136 (14.7)	Ref	—
No	**211**	81 (38.4)	2.48	(1.98–3.11)**
Current gender-affirming hormone treatment				
Yes	**1,068**	196 (18.4)	Ref	—
No (recent† but not current)	**97**	34 (35.1)	1.82	(1.50–2.20)**
Visited health care provider recently§				
Yes	**1,114**	206 (18.5)	Ref	—
No	**51**	24 (47.1)	2.55	(2.10–3.10)**
Transgender-specific health care††				
Yes	**1,054**	190 (18.0)	Ref	—
No	**111**	40 (36.0)	1.91	(1.2–2.83)**
Economic circumstances				
Poverty§§				
Above Federal poverty level	**417**	86 (20.6)	Ref	—
At or below Federal poverty level	**740**	142 (19.2)	0.91	(0.69–1.20)
Experienced homelessness¶¶				
Currently or recently§ homeless	**496**	137 (27.6)	1.96	(1.59–2.41)**
Not currently or recently§ homeless	**669**	93 (13.9)	Ref	—
Recent§ exchange sex***				
Yes	**400**	115 (28.8)	1.88	(1.48–2.38)**
No	**764**	115 (15.1)	Ref	—

Abbreviations: PR = prevalence ratio; Ref = referent group.

* Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.

† N = 1,165 participants. Numbers might not sum to totals because of missing data.

§ Reported within a reference period of 12 months.

¶ Denotes comparisons made using log-linked Poisson regression with generalized estimating equations, adjusted for respondent-driven sampling design, controlling for network cluster and city.

** Statistically significant; 95% CIs do not cross the null of 1.0.

†† "Transgender-specific health care" measured as "Ever having a provider with whom you are comfortable discussing gender related issues."

§§ 2019 Federal poverty level thresholds were calculated on the basis of U.S. Department of Health and Human Services Federal poverty level guidelines (https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/prior-hhs-poverty-guidelines-federal-register-references/2019-poverty-guidelines).

¶¶ Homelessness was defined as having lived on the street, in a shelter, in a single room occupancy hotel, or in a car during the past 12 months.

*** Exchange sex was defined as having received money or drugs in exchange for sex during the past 12 months.

persons who are not actively engaged in health care (*14*), lacking transgender-specific health care was not significantly associated with use of nonprescription hormones in the final model. A multi-item measure of medical mistrust and further investigation of each respondent's rationale for using nonprescription hormones could provide valuable insight into how best to prevent nonprescription use. In this sample and survey, the use of nonprescription hormones versus prescription hormones appears to be associated primarily with economically tenuous circumstances (e.g., participating in exchange sex or experiencing homelessness), despite not being directly associated with poverty as determined by the 2019 Federal poverty level. When appropriately administered, hormone treatment can cost hundreds of dollars to initiate even when insured and might come from a culturally insensitive provider. As a result, many transgender persons choose to independently obtain and administer their own hormone treatment. Even if the dangers of using nonprescription hormones are known, the dangers of stigmatizing and unsupportive experiences in health care and high medical costs might be more salient for those who desire hormonal treatment.

Limitations

General limitations for NHBS-Trans are available in the overview and methodology report of this supplement (*11*). The findings in this report are subject to at least six additional limitations. First, the results are not representative of transgender women residing outside the seven urban areas. Because transgender women are hard to reach, the data might not be representative of all transgender women residing in the seven urban areas. However, this is the first time behavioral and contextual data were successfully collected through systematic biobehavioral surveillance of transgender women.

TABLE 3. Associations with nonprescription gender-affirming hormone treatment among transgender women* — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,† United States, 2019–2020

Variable	aPR	95% CI
Health care access		
Transgender-specific health insurance coverage		
Yes	Ref	—
No	2.26	(1.80–2.84)§
Visited health care provider recently¶		
Yes	Ref	—
No	1.81	(1.45–2.27)§
Economic conditions		
Experienced homelessness**		
Yes	Ref	—
No	1.76	(1.43–2.19)§
Recent exchange sex††		
No	Ref	—
Yes	1.62	(1.30–2.01)§

Abbreviations: aPR = adjusted prevalence ratio; Ref = referent group.
* Denotes comparisons made using log-linked Poisson regression with generalized estimating equations, adjusted for respondent-driven sampling design, controlling for network cluster and city.
† Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.
§ Statistically significant; 95% CIs do not cross the null of 1.0.
¶ Reported within a reference period of 12 months.
** Homelessness was defined as having lived on the street, in a shelter, in a single room occupancy hotel, or in a car during the past 12 months.
†† Exchange sex was defined as having received money or drugs in exchange for sex during the past 12 months.

Second, all data used for this analysis were self-reported and are subject to recall and social desirability biases, particularly concerning sex behavior, exchange sex and drug use (*15*). Social desirability could bias the results in multiple ways, whether through underreporting of nonprescribed GAHT use because participants are not certain whether it is punishable by law or underreporting of correlates such as homelessness or exchange sex because of social stigma and perceived legal consequences. Third, analyses were limited to cross-sectional associations; therefore, temporality or causation could not be assessed. Fourth, the survey did not collect reasons for using nonprescription hormones, for never taking hormones, or for stopping hormone treatment, all of which could help identify the primary barriers to obtaining hormones via prescription. Fifth, measures of access to transgender-specific health care and insurance coverage used in this survey were minimal, each focusing on a single criterion (comfort discussing transgender health with their provider and insurance coverage specifically for hormone treatment, respectively). Willingness to discuss transgender-specific health with a provider does not imply the care received was appropriate or culturally competent, so this measure might better reflect a scarcity of affirming providers than it reflects availability of quality care. Similarly, although insurance coverage for hormones is an essential part of transgender health care, the survey did not assess if respondents had insurance coverage for the specific forms of hormone treatment they desire, or coverage for the many other forms of gender-affirming care often sought by transgender persons. Finally, the question assessing homelessness is limited and doesn't include transitory instances of housing instability (e.g., couch surfing).

Conclusion

This analysis is the first to examine use of nonprescription hormones among transgender women in a sample from multiple urban areas. The geographical breadth and rigorous sampling strategy reinforce findings from previous research, further demonstrating association between use of nonprescription hormones compared with only prescription hormones and clear indicators of social and economic marginalization, such as disengagement from health care (*6*,*7*), lack of adequate insurance coverage (*1*), recent participation in exchange sex (*10*), and experiencing recent homelessness (*9*).

An important topic for future research is understanding reasons for using nonprescription hormones. GAHT is regarded as essential health care for transgender persons who desire it, a determination supported by extensive research demonstrating the positive health outcomes associated with hormone therapy, as well as reduction of negative health outcomes associated with hormone therapy (*2*,*16*). Where gender-affirming hormones are desired but not accessible through safe and legal means, nonprescription sources provide an alternative means of access. If the conditions that necessitate nonprescription hormone use can be mitigated, whether through tailored social programs to provide accessible and affordable hormone treatment administered by gender-affirming providers or through broader actions to prevent economic disadvantage among transgender persons, nonprescription hormone use can be abandoned in favor of more accessible treatment under appropriate medical supervision.

National HIV Behavioral Surveillance Among Transgender Women Study Group

Narquis Barak, CrescentCare; Kathleen A. Brady, Philadelphia Department of Public Health; Sarah Braunstein, New York City Department of Health and Mental Hygiene; Jasmine Davis, CrescentCare; Sara Glick, University of Washington, School of Medicine, Division of Allergy and Infectious Diseases, Public Health – Seattle & King County, HIV/STD Program; Andrea Harrington, Philadelphia Department of Public Health; Jasmine Lopez, New York City Department of Health and Mental Hygiene; Yingbo Ma, Los Angeles County Department of Public Health; Aleks Martin, Public Health – Seattle & King County, HIV/STD Program; Genetha Mustaafaa, Georgia Department of Public Health; Tanner Nassau, Philadelphia Department of Public Health; Gia Olaes, Los Angeles County Department of Public Health; Jennifer Reuer, Washington State Department of Health; Alexis Rivera, New York City Department of Health and Mental Hygiene; William T. Robinson, Louisiana State University Health Science Center in New Orleans – School of Public Health, Louisiana Office of Public Health STD/HIV/Hepatitis Program; Ekow Kwa Sey, Los Angeles County Department of Public Health; Sofia Sicro, San Francisco Department of Public Health; Brittany Taylor, Georgia Department of Public Health; Dillon Trujillo, San Francisco Department of Public Health; Erin Wilson, San Francisco Department of Public Health; Pascale Wortley, Georgia Department of Public Health.

Conflicts of Interest

All authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. No conflicts of interest were reported.

References

1. Stroumsa D, Crissman HP, Dalton VK, Kolenic G, Richardson CR. Insurance coverages and use of hormones among transgender respondents to a national survey. Ann Fam Med 2020;18:528–34 PMID:33168681 https://doi.org/10.1370/afm.2586.
2. Gorin-Lazard A, Baumstarck K, Boyer L, et al. Is hormonal therapy associated with better quality of life in transsexuals? A cross-sectional study. J Sex Med 2012;9:531–41 PMID:22145968 https://doi.org/10.1111/j.1743-6109.2011.02564.x.
3. Baker KE, Wilson LM, Sharma R, Dukhanin V, McArthur K, Robinson KA. Hormone therapy, mental health, and quality of life among transgender people: a systematic review. J Endocr Soc 2021;5:bvab011. PMID:33644622 https://doi.org/10.1210/jendso/bvab011.
4. Rosen JG, Malik M, Cooney EE, et al. Antiretroviral treatment interruptions among Black and Latina transgender women living with HIV: characterizing co-occurring, multilevel factors using the gender affirmation framework. AIDS Behav 2019;23:2588–99 PMID:31263998 https://doi.org/10.1007/s10461-019-02581-x.
5. Unger CA. Hormone therapy for transgender patients. Transl Androl Urol 2016;5:877–84 PMID:28078219 https://doi.org/10.21037/tau.2016.09.04.
6. de Haan G, Santos GM, Arayasirikul S, Raymond HF. Non-prescribed hormone use and barriers to care for transgender women in San Francisco. LGBT Health 2015;2:313–23 PMID:26788772 https://doi.org/10.1089/lgbt.2014.0128.
7. Mepham N, Bouman WP, Arcelus J, Hayter M, Wylie KR. People with gender dysphoria who self-prescribe cross-sex hormones: prevalence, sources, and side effects knowledge. J Sex Med 2014;11:2995–3001 PMID:25213018 https://doi.org/10.1111/jsm.12691.
8. Connelly PJ, Marie Freel E, Perry C, et al. Gender-affirming hormone therapy, vascular health and cardiovascular disease in transgender adults. Hypertension 2019;74:1266–74 PMID:31656099 https://doi.org/10.1161/HYPERTENSIONAHA.119.13080.
9. Costa MCB, McFarland W, Wilson EC, et al. Prevalence and correlates of nonprescription hormone use among trans women in São Paulo, Brazil. LGBT Health 2021;8:162–6 PMID:33439757 https://doi.org/10.1089/lgbt.2020.0059.
10. Hernandez CJ, Santos GM, Wilson EC. Association of documentation of legal residency status with nonprescribed hormone use among Hispanic/Latina trans women in San Francisco. Health Equity 2020;4:263–71 PMID:34095696 https://doi.org/10.1089/heq.2019.0104.
11. Kanny D, Lee K, Olansky E, et al. Overview and methodology of the National HIV Behavioral Surveillance Among Transgender Women—Seven Urban Areas, United States, 2020. In: National HIV Behavioral Surveillance Among Transgender Women—seven urban areas, United States, 2019–2020. MMWR Suppl 2024;73(No. Suppl-1):1–8.
12. Davies A, Wood LJ. Homeless health care: meeting the challenges of providing primary care. Med J Aust 2018;209:230–4 PMID:30157413 https://doi.org/10.5694/mja17.01264.
13. Fitzgerald E, Elspeth S, Hickey D. Meaningful work: transgender experiences in the sex trade. Best Practices Policy Project. Washington, DC: National Center for Transgender Equality, and Red Umbrella Project; 2015.
14. James S, Herman J, Rankin S, et al. The report of the U.S. Transgender Survey. Washington, DC: National Center for Transgender Equality; 2015. https://transequality.org/sites/default/files/docs/usts/USTS-Full-Report-Dec17.pdf
15. Rao A, Tobin K, Davey-Rothwell M, Latkin CA. Social desirability bias and prevalence of sexual HIV risk behaviors among people who use drugs in Baltimore, Maryland: implications for identifying individuals prone to underreporting sexual risk behaviors. AIDS Behav 2017;21:2207–14 PMID:28509997 https://doi.org/10.1007/s10461-017-1792-8.
16. Rosen JG, Malik M, Cooney EE, et al. Antiretroviral treatment interruptions among Black and Latina transgender women living with HIV: characterizing co-occurring, multilevel factors using the Gender Affirmation Framework. AIDS Behav 2019;23:2588–99 PMID:31263998 https://doi.org/10.1007/s10461-019-02581-x.

Transgender Women Experiencing Homelessness — National HIV Behavioral Surveillance Among Transgender Women, Seven Urban Areas, United States, 2019–2020

Ruthanne Marcus, PhD[1]; Lindsay Trujillo, MPH[1,2]; Evelyn Olansky, MPH[1,2]; Susan Cha, PhD[1]; Rebecca B. Hershow, PhD[1]; Amy R. Baugher, MPH[1]; Catlainn Sionean, PhD[1]; Kathryn Lee, MPH[1]; National HIV Behavioral Surveillance Among Transgender Women Study Group

[1]*Division of HIV Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, CDC, Atlanta, Georgia;*
[2]*Social & Scientific Systems, Inc., Silver Spring, Maryland*

Abstract

Transgender women experience high prevalence of homelessness, which can affect their likelihood of acquiring HIV infection and can lead to poor medical outcomes. CDC analyzed data from the National HIV Behavioral Surveillance Among Transgender Women to identify whether personal characteristics and social factors affecting transgender women were associated with duration of homelessness during the past 12 months. Longer duration and chronic homelessness might indicate greater unmet needs, which increases their likelihood for acquiring HIV infection. Ordinal logistic regression was conducted to calculate adjusted prevalence odds ratios and 95% CIs for transgender women from seven urban areas in the United States experiencing homelessness 30–365 nights, 1–29 nights, and zero nights during the past 12 months. Among 1,566 transgender women, 9% reported 1–29 nights homeless and 31% reported 30–365 nights homeless during the past 12 months. Among participants who reported physical intimate partner violence or forced sex, 50% and 47%, respectively, reported experiencing 30–365 nights homeless. Furthermore, 55% who had been evicted or denied housing because of their gender identity and 58% who had been incarcerated during the past year experienced 30–365 nights homeless. The odds of transgender women experiencing longer duration of homelessness was associated with being younger and having a disability; higher psychological distress scores were associated with longer duration of homelessness. Analysis of social determinants of health found transgender women experiencing longer homelessness to be less educated, living below the Federal poverty level, and having lower social support. Therefore, focusing on HIV prevention and interventions addressing housing instability to reduce the duration of homelessness among transgender women is important. Further, integrating housing services with behavioral health services and clinical care, specifically designed for transgender women, could reduce HIV acquisition risk and improve HIV infection outcomes.

Introduction

Persons experiencing homelessness have increased risk for acquiring HIV infection and subsequent poor HIV outcomes (*1*). Transgender women account for <1% of the U.S. population (*2*), yet among transgender women, HIV prevalence rates up to 42% have been reported (*3*,*4*). Moreover, 39% of transgender women participating in the National HIV Behavioral Surveillance Among Transgender Women (NHBS-Trans) during 2019–2020 reported experiencing homelessness during the past 12 months (*3*,*5*). Housing instability, including homelessness, among transgender persons is often associated with poor medical outcomes (e.g., HIV and other viral infections), adverse mental health outcomes (*6*,*7*), psychological stressors (*8*), and lack of social support (*8*). A qualitative study of transgender persons found financial insecurity and interpersonal rejection by family and friends to be key factors associated with housing instability (*8*). These stressors often resulted in psychological strain and subsequent drug and sexual behaviors that increase the risk for HIV acquisition, including exchanging sex for money or drugs. Laws that discriminate against (*9*) and marginalize (*10*) transgender women further affect housing status and health outcomes. These policies are often fueled by societal transphobia (*11*,*12*). The duration of homelessness is associated with factors (e.g., substance use) that increase HIV risk among adults experiencing homelessness (*13*).

Housing instability can be dynamic, and definitions of homelessness vary, often related to duration of instability such as short-term or episodic (e.g., couch surfing, evictions, and frequent moves) versus longer-term or chronic homelessness (*14*). Although previous studies provided important information on factors associated with housing instability among transgender women, they involved limited samples in one location or specific subpopulations and did not assess associations between duration of homelessness during the past

Corresponding author: Ruthanne Marcus, Division of HIV Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, CDC. Telephone: 404-718-7954; Email: ram1@cdc.gov.

12 months and the personal characteristics (e.g., age, race and ethnicity, HIV status, disability, and psychological distress) or social factors (e.g., education, insurance status, poverty level, experiences of abuse, eviction, being denied housing access, perceived social support, incarceration, and exchange sex) experienced by transgender women (*7*,*15*). The focus of this report is to identify specific personal characteristics and social factors associated with duration of homelessness defined as the number of nights spent homeless during the past 12 months among transgender women from seven urban areas in the United States. These findings can be used by housing services and health care providers to guide tailored HIV prevention and housing services for transgender women.

Methods

Data Source

This report analyzes survey data from the National HIV Behavioral Surveillance Among Transgender Women (NHBS-Trans) conducted by CDC during June 2019–February 2020 to assess behavioral risks, prevention usage, and HIV prevalence. Eligible participants completed an interviewer-administered questionnaire and were offered HIV testing. Additional information about NHBS-Trans eligibility criteria, data collection, and biologic testing is available in the overview and methodology report of this supplement (*16*). The NHBS-Trans protocol questionnaire and documentation are available at https://www.cdc.gov/hiv/statistics/systems/nhbs/methods-questionnaires.html#trans.

Applicable local institutional review boards in each participating project area approved NHBS-Trans activities. The NHBS-Trans sample included 1,608 transgender women in seven urban areas in the United States (Atlanta, Georgia; Los Angeles, California; New Orleans, Louisiana; New York City, New York; Philadelphia, Pennsylvania; San Francisco, California; and Seattle, Washington) recruited using respondent-driven sampling. This analysis is restricted to 1,566 participants with no missing information on homelessness during the past 12 months. This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable federal law and CDC policy.*

Measures

Homelessness was defined as living on the street, in a shelter, in a single room occupancy hotel, or in a car during the past 12 months; participants who reported experiencing homelessness during the past 12 months were asked the number of nights they were homeless (Table 1). Participants were categorized as homeless 1–29 nights or 30–365 nights, or not homeless during the past 12 months; the number of nights did not need to be consecutive. These cut-offs were established to examine short-term or episodic homelessness and longer-term or chronic homelessness (*14*). Participants were asked about their personal characteristics and social factors.

Personal characteristics included demographics (age and race and ethnicity) and health status (HIV status based on National HIV Behavioral Surveillance HIV test result, disability status, and psychological distress). (Persons of Hispanic or Latina [Hispanic] origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.) Disability status was measured using the U.S. Department of Health and Human Services data standard for disability status (*17*). Psychological distress was measured with the Kessler Psychological Distress Scale (Kessler-6) (*18*). The Kessler-6 is a screening tool used to assess the prevalence of serious mental illness during the past 30 days, as defined by meeting criteria in the *Diagnostic and Statistical Manual IV*. Each question used a five-item Likert scale (4 = all of the time, 3 = most of the time, 2 = some of the time, 1 = a little of the time, and 0 = none of the time); responses were summed to an overall psychological distress score (range = 0–24).

Social factors were defined as education, health insurance status, and poverty level. Experience of abuse included experience of physical intimate partner violence, forced sex, or physical violence or harassment because of gender identity or presentation during the past 12 months. Social support was collected using the Multidimensional Scale of Perceived Social Support (MSPSS) (*19*), a 12-item scale used to measure social support of family, friends, and other special persons in the women's lives. The scale uses a five-item Likert scale (5 = strongly agree to 1 = strongly disagree) for each question. Question scores were summed and averaged to calculate the overall social support score and SD. The MSPSS has demonstrated good internal validity among transgender women (*20*).

Additional social factors included whether the participant had been denied housing or been evicted during the past 12 months because they were transgender or gender nonconforming, had a history of incarceration, and had a history of exchanging sex for money or drugs (i.e., sex work). Housing discrimination was defined as being denied housing or being evicted during the past 12 months because they are transgender or gender nonconforming. Definitions of demographics and social determinants of health are available in the overview and methodology report in this supplement (*16*).

* 45 C.F.R. part 46, 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.

TABLE 1. Variables, survey questions, measures, and analytic codings for personal and social variables among transgender women experiencing homelessness — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,* United States, 2019–2020

Variable	Question or measure	Analytic coding
Personal characteristic		
Age at interview, yrs	What is your date of birth?	18–24, 25–29, 30–39, 40–49, or ≥50
Race and ethnicity†	Do you consider yourself to be of Hispanic, Latino/a, or Spanish origin? Which racial group or groups do you consider yourself to be in? You may choose more than one option.	American Indian or Alaska Native, Asian, Black or African American, Hispanic or Latina, Native Hawaiian or other Pacific Islander, White, or multiple races or ethnicities
Disability status§	Are you deaf or do you have serious difficulty hearing? Are you blind or have serious difficulty seeing, even when wearing glasses? Because of a physical, mental, or emotional condition, do you have serious difficulty concentrating, remembering, or making decisions? Do you have serious difficulty walking or climbing stairs? Do you have difficulty dressing or bathing? Because of a physical, mental, or emotional condition, do you have difficulty doing errands alone, such as visiting a doctor's office or shopping?	Yes to at least one of these six questions or no to all questions
Psychological distress¶	About how often during the past 30 days did you feel nervous? During the past 30 days, about how often did you feel hopeless? During the past 30 days, about how often did you feel restless or fidgety? How often did you feel so sad or depressed that nothing could cheer you up? During the past 30 days, about how often did you feel that everything was an effort? During the past 30 days, about how often did you feel down on yourself, no good, or worthless?	For respondents with nonmissing values on all six items, responses to all items were summed to create a psychological distress score (range = 0–24). Respondents with missing values for any of the six items were set to missing.
HIV status**	NHBS biologic HIV test result	Positive or negative
Social factor		
Education	What is the highest level of education you completed?	High school, high school diploma or equivalent, some college or technical degree, college degree or more
Social support††	MSPSS — social support scale	Mean social support score (SD). Social support was calculated from 12 questions from three subscales of family support, friend support, and significant other support. Each item of the 12 questions had a five-point response option ranging from "strongly agree" (5) to "strongly disagree" (1).
Housing discrimination	In the past 12 months, have you been denied housing or been evicted because you are transgender or gender nonconforming?	Yes or no
Incarceration	During the past 12 months, that is, since [interview month] of last year, have you been held in a detention center, jail, or prison for more than 24 hours? Have you ever been held in a detention center, jail, or prison for more than 24 hours?	Incarcerated in the past 12 months; incarcerated, but not in the past 12 months; or never incarcerated
Outcome variable		
Homelessness	In the past 12 months, that is, since [interview month] of last year, have you been homeless at any time? By homeless, I mean you were living on the street, in a shelter, in a single room occupancy hotel, or in a car. If yes, about how many total nights were you homeless?	1–29, 30–365, or 0

Abbreviations: MSPSS = Multidimensional Scale of Perceived Social Support; NHBS = National HIV Behavioral Surveillance.
* Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.
† Persons of Hispanic or Latina (Hispanic) origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.
§ Serious difficulty hearing, seeing, doing cognitive tasks, walking or climbing stairs, dressing or bathing, or doing errands alone. Adjusted for age. Based on U.S. Department of Health and Human Services disability data standard (https://aspe.hhs.gov/reports/hhs-implementation-guidance-data-collection-standards-race-ethnicity-sex-primary-language-disability-0).
¶ **Source:** Kessler RC, Barker PR, Colpe LJ, et al. Screening for serious mental illness in the general population. Arch Gen Psychiatry 2003;60:184–9.
** Determined based on NHBS rapid HIV test results.
†† **Source:** Zimet GD, Powell SS, Farley GK, Werkman S, Berkoff KA. Psychometric characteristics of the Multidimensional Scale of Perceived Social Support. J Pers Assess 1990;55:610–7.

Analysis

Univariate distribution of nights of homelessness was examined to determine appropriate cut-offs to classify short-term or episodic (1–29 nights) and longer-term or chronic homelessness (30–365 nights). Descriptive statistics of personal characteristics and social factors were conducted by the three-level outcome variable of duration of homelessness. The association between duration of homelessness and personal characteristics and social factors was evaluated through ordinal

logistic regression analysis by using a proportional odds model. This approach was taken to evaluate the associations based on the ordinal outcome variable of nights of homelessness, on the basis of the assumption that these associations are homogeneous. The assumption of proportionality of the odds of the outcome was evaluated using the proportional odds score test, which tests the null hypothesis of no difference between the coefficients associated with the levels of duration of homelessness for transgender women. This method generated adjusted prevalence odds ratios and 95% CIs; models were adjusted for city of residence and network size and clustered on recruitment chain. Results were considered statistically significant if the 95% CI range did not overlap with the null (null = 1). Cronbach's alpha was calculated to assess internal consistency of the MSPSS. Analyses were conducted using SAS software (version 9.4; SAS Institute).

Results

Of the 1,608 NHBS participants, 42 were excluded from the analysis due to missing data on homelessness. Among these, 1,566 transgender women, 936 (60%) had not experienced homelessness during the past 12 months, 140 (9%) were homeless 1–29 nights, and 490 (31%) were homeless 30–365 nights (Table 2). Among those who were homeless 1–29 nights, the median number of nights homeless was seven, and the median number of nights homeless among those who were homeless 30–365 nights was 180. Experiencing 30–365 nights of homelessness was more prevalent among transgender women who were younger, had a disability, and were living at or below the Federal poverty level. Transgender women who had experienced any form of abuse (physical intimate partner violence: 49.8%; forced sex: 47.0%; physical violence: 42.9%) experienced 30–365 nights homeless. Transgender women who reported being evicted or denied housing because they are transgender or gender nonconforming (55.3%) experienced 30–365 nights homeless. Transgender women who had been incarcerated during the past 12 months (58.4%) and who had exchanged sex for money or drugs (43.6%) experienced 30–365 nights homeless.

The odds of being homeless for a longer duration were higher for younger age groups of transgender women than the corresponding odds of longer duration of homelessness among transgender women aged ≥50 years (Table 3). The odds of longer duration of homelessness for transgender women with a disability were 1.24 times the corresponding odds among those without a disability. The odds of longer duration of homelessness for transgender women with less education were higher than the corresponding odds among transgender women having a college degree or more. Transgender women reporting an income at or below the Federal poverty level had 1.29 times the corresponding odds of experiencing longer duration of homelessness among transgender women having income above the Federal poverty level.

Transgender women who experienced certain types of abuse had higher odds of longer duration of homelessness than transgender women who did not experience abuse (Table 3). Social support was negatively associated with longer duration of homelessness among transgender women. Transgender women who were evicted or denied housing because they are transgender or gender nonconforming during the past 12 months had 1.37 times the odds of longer duration of homelessness compared with those who were not evicted or denied housing because they were transgender or gender nonconforming. Ever being incarcerated, whether before the past 12 months or during the past 12 months, was associated with longer duration of homelessness than for transgender women who had never been incarcerated. The odds of longer duration of homelessness among transgender women who exchanged sex for money or drugs during the past 12 months were 1.24 times the corresponding odds among those who did not exchange sex.

Discussion

During 2019–2020, transgender women participating in NHBS-Trans reported high prevalence of homelessness. Numerous personal characteristics and social factors were associated with longer duration of homelessness, with four out of 10 transgender women experiencing homelessness during the past 12 months (*4*), approximately three out of 10 experiencing 30–365 nights homeless, and approximately one out of 10 experiencing 1–29 nights homeless. Longer duration of homelessness was positively associated with younger age groups, lower educational attainment, income at or below the Federal poverty level, having a disability, experiences of abuse during the past 12 months, incarceration, eviction or denial of housing because they are transgender or gender nonconforming, and exchange sex. Longer duration of homelessness was negatively associated with social support. Efforts to prevent HIV transmission and to address housing instability for transgender women are urgently needed. These efforts should focus on systemic problems of economic instability, housing discrimination, and antitransgender discrimination that affect transgender women's ability to access safe and affordable housing.

The proportion of younger transgender women experiencing homelessness, especially those aged <40 years, is of concern

TABLE 2. Number and percentage of transgender women experiencing homelessness,* by duration of homelessness during the past 12 months and selected characteristics — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,† United States, 2019–2020§

	Duration of homelessness, nights			
	30–365	1–29	0	
Characteristic	No. (row %)	No. (row %)	No. (row %)	Total no. (row)
Overall	**490 (31.3)**	**140 (8.9)**	**936 (59.8)**	**1,566**
No. of nights homeless, median (IQR)	180.0 (60.0–365.0)	7.0 (4.0–14.0)	0.0 (—)	
Demographic				
Age group, yrs				
18–24	82 (43.6)	22 (11.7)	84 (44.7)	**188**
25–29	102 (33.9)	36 (12.0)	163 (54.2)	**301**
30–39	153 (33.6)	44 (9.6)	259 (56.8)	**456**
40–49	80 (27.1)	23 (7.8)	192 (65.1)	**295**
≥50	73 (22.4)	15 (4.6)	238 (73.0)	**326**
Race and ethnicity¶				
American Indian or Alaska Native	6 (42.9)	0 (0.0)	8 (57.1)	**14**
Asian	6 (20.7)	3 (10.3)	20 (69.0)	**29**
Black or African American	187 (33.5)	51 (9.1)	321 (57.4)	**559**
Native Hawaiian or other Pacific Islander	7 (16.7)	3 (7.1)	32 (76.2)	**42**
White	64 (36.6)	13 (7.4)	98 (56.0)	**175**
Multiple races	47 (40.5)	9 (7.8)	60 (51.7)	**116**
Hispanic or Latina	171 (27.2)	61 (9.7)	396 (63.1)	**628**
Health status				
NHBS HIV test result**				
Positive	213 (33.1)	57 (8.9)	373 (58.0)	**643**
Negative	262 (29.9)	82 (9.4)	532 (60.7)	**876**
Disability status††				
Has a disability	328 (39.6)	72 (8.7)	428 (51.7)	**828**
No disability	158 (21.6)	67 (9.1)	506 (69.2)	**731**
Mental health				
Psychological distress§§				
Score (mean [SD])	10.62 (5.59)	10.54 (5.44)	8.01 (5.11)	**9.05 (5.44)**
Social factors				
Education				
<High school	110 (32.8)	33 (9.9)	192 (57.3)	**335**
High school or equivalent	200 (34.1)	61 (10.4)	326 (55.5)	**587**
Some college or technical degree	145 (31.0)	33 (7.1)	290 (62.0)	**468**
College degree or more	34 (19.5)	12 (6.9)	128 (73.6)	**174**
Health insurance status				
Uninsured	88 (33.1)	36 (13.5)	142 (53.4)	**266**
Insured	401 (30.9)	104 (8.0)	794 (61.1)	**1299**
Poverty level¶¶				
At or below Federal poverty level	374 (38.1)	101 (10.3)	506 (51.6)	**981**
Above Federal poverty level	110 (19.3)	38 (6.7)	423 (74.1)	**571**
Experience of abuse past 12 months				
Physical intimate partner violence***				
Yes	119 (49.8)	31 (13.0)	89 (37.2)	**239**
No	370 (27.9)	109 (8.2)	846 (63.8)	**1,325**
Forced sex†††				
Yes	109 (47.0)	29 (12.5)	94 (40.5)	**232**
No	378 (28.4)	110 (8.3)	841 (63.3)	**1,329**
Physical violence§§§				
Yes	179 (42.9)	61 (14.6)	177 (42.4)	**417**
No	310 (27.0)	79 (6.9)	758 (66.1)	**1,147**
Social support scale¶¶¶				
Score (mean [SD])	3.47 (0.90)	3.70 (0.79)	3.85 (0.82)	**3.72 (0.86)**
Evicted or denied housing because they are transgender or gender nonconforming past 12 mos				
Yes	121 (55.3)	30 (13.7)	68 (31.1)	**219**
No	364 (27.2)	109 (8.1)	867 (64.7)	**1,340**

See table footnotes on the next page.

TABLE 2. (*Continued*) Number and percentage of transgender women experiencing homelessness,* by duration of homelessness during the past 12 months and selected characteristics — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,† United States, 2019–2020§

	Duration of homelessness, nights			
	30–365	1–29	0	
Characteristic	No. (row %)	No. (row %)	No. (row %)	Total no. (row)
Incarceration**				
Never incarcerated	147 (22.5)	47 (7.2)	459 (70.3)	**653**
Incarcerated, not in past 12 months	186 (29.0)	57 (8.9)	398 (62.1)	**641**
Incarcerated in past 12 months	157 (58.4)	36 (13.4)	76 (28.3)	**269**
Exchange sex for money or drugs†††				
Yes	235 (43.6)	54 (10.0)	250 (46.4)	**539**
No	254 (24.8)	86 (8.4)	686 (66.9)	**1,026**

Abbreviations: IQR = interquartile range; NHBS = National HIV Behavioral Surveillance.

* N = 1,566 participants with no missing information on homelessness during the past 12 months.

† Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.

§ Numbers might not add to total because of missing data. Percentages might not add to 100 because of rounding.

¶ Persons of Hispanic or Latina (Hispanic) origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.

** Participants with a reactive rapid NHBS HIV test result supported by a second rapid test or supplemental laboratory-based testing.

†† Serious difficulty hearing, seeing, doing cognitive tasks, walking or climbing stairs, dressing or bathing, or doing errands alone. Adjusted for age. Based on U.S. Department of Health and Human Services disability data standard (https://aspe.hhs.gov/reports/hhs-implementation-guidance-data-collection-standards-race-ethnicity-sex-primary-language-disability-0).

§§ Psychological distress was measured by the Kessler Psychological Distress Scale (range = 0–24) (Cronbach's alpha = 0.85).

¶¶ 2019 Federal poverty level thresholds were calculated on the basis of U.S. Department of Health and Human Services Federal poverty level guidelines (https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/prior-hhs-poverty-guidelines-federal-register-references/2019-poverty-guidelines).

*** Physically abused or harassed by a sexual partner.

††† Physically forced or verbally threatened to have sex when they did not want to.

§§§ Physically abused or harassed because of gender identity or presentation.

¶¶¶ Measured by 12-item Multidimensional Scale of Perceived Social Support. Responses to the five questions were summed and averaged (range = 1–5) (Cronbach's alpha = 0.92).

**** Incarceration was defined as having been held in a detention center, jail, or prison for >24 hours.

†††† Sex work was defined as receiving money or goods in exchange for sex during the past 12 months.

and is consistent with previous studies (*21*,*22*). Younger transgender women might experience a lack of familial support (*23*,*24*) and economic marginalization because of fewer employment opportunities and employment discrimination (*21*). Transgender youths experience higher rates of violence victimization, substance use, suicide risk, and sexual risk than their cisgender counterparts (*25*), which affect options for housing and employment. Transgender youths are also more likely to engage in survival sex, which is associated with homelessness (*26*).

Psychological distress was associated with longer duration of homelessness among transgender women. Multiple studies, including a systematic review that applied the minority stress model as a framework for reviewing 77 studies of mental health conditions among transgender or gender nonconforming persons (*27*), found mental health conditions and psychological distress to be higher among transgender women than among their heterosexual counterparts (*28*). Other researchers have found psychological distress, as identified in this study, to be associated with experiences of housing instability (*27*).

Social factors (e.g., low educational attainment) were associated with longer duration of homelessness, supporting the findings of a study that reported that young transgender women who had dropped out of school because of stigma or harassment for being transgender were more likely to experience negative consequences, including incarceration (*29*). Higher educational attainment directly affects employment opportunities and poverty status. Requiring training for teachers and administrators that focuses on strategies to reduce stigma, discrimination, and bullying in school systems could improve retention in school for young transgender women (*25*).

Social support was lower among transgender women experiencing longer duration of homelessness than among those not experiencing homelessness. A lack of social support for transgender women can increase depression and anxiety (*30*) and affect resilience (*31*), which are associated with housing instability. Further, social isolation can affect engagement and retention in HIV care and viral suppression for transgender women with diagnosed HIV infection (*32*). Family members, friends, health providers, and community members can access resources to self-educate and learn how to express support for their transgender loved ones (e.g., through resources for parents from the Trans Youth Equality Foundation [http://www.transyouthequality.org/for-parents] and PFLAG [https://pflag.org/glossary_term/transgender]).

Experiences of violence and abuse also were associated with longer duration of homelessness, indicating another layer of

TABLE 3. Comparison of duration of homelessness among transgender women who have experienced homelessness,* by selected characteristics — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,† United States, 2019–2020

Characteristic	Longer duration of homelessness§ aPOR¶ (95% CI)
Demographics	
Age group, yrs	
18–24	3.11 (1.80–5.36)
25–29	2.12 (1.41–3.17)
30–39	1.97 (1.29–3.01)
40–49	1.42 (0.99–2.03)
≥50	Ref
Health status	
NHBS HIV test result**	
Positive	1.03 (0.97–1.10)
Negative	Ref
Disability status††	
Has a disability	1.24 (1.17–1.31)
No disability	Ref
Mental health	
Psychological distress§§	1.02 (1.02–1.03)
Social factors	
Education	
<High school	2.04 (1.22–3.44)
High school or equivalent	2.20 (1.40–3.44)
Some college or technical degree	1.75 (1.13–2.71)
College degree or more	Ref
Health insurance status	
Uninsured	1.03 (0.95–1.12)
Insured	Ref
Poverty level¶¶	
At or below Federal poverty level	1.29 (1.18–1.40)
Above Federal poverty level	Ref
Experience of abuse past 12 months	
Physical intimate partner violence* **	
Yes	1.29 (1.22–1.36)
No	Ref
Forced sex†††	
Yes	1.25 (1.16–1.35)
No	Ref
Social support scale§§§	0.89 (0.86–0.92)
Evicted or denied housing because they are transgender or gender nonconforming past 12 months	
Yes	1.37 (1.29–1.46)
No	Ref
Incarceration¶¶¶	
Never incarcerated	Ref
Incarcerated, not in past 12 months	1.42 (1.05–1.91)
Incarcerated in past 12 months	5.13 (3.66–7.20)
Exchange sex for money or drugs****	
Yes	1.24 (1.18–1.30)
No	Ref

Abbreviations: aPOR = adjusted prevalence odds ratio; NHBS = National HIV Behavioral Surveillance; Ref = referent group.

* Adjusted prevalence odds ratios and confidence intervals from ordinal logistic regression of N = 1,566 participants with no missing information on homelessness during the past 12 months.

† Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.

§ All models presented were separate; each was adjusted for urban area and network size and clustered on recruitment chains; longer duration of homelessness was defined as a three-level ordinal variable of 0, 1–29, and 30–365 nights homeless during the past 12 months.

¶ All models satisfied the proportional odds assumption score test.

** Participants with a reactive rapid NHBS HIV test result supported by a second rapid test or supplemental laboratory-based testing.

†† Serious difficulty hearing, seeing, doing cognitive tasks, walking or climbing stairs, dressing or bathing, or doing errands alone. Adjusted for age. Based on U.S. Department of Health and Human Services disability data standard (https://aspe.hhs.gov/reports/hhs-implementation-guidance-data-collection-standards-race-ethnicity-sex-primary-language-disability-0).

§§ Psychological distress was measured by the Kessler Psychological Distress Scale (range = 0–24).

¶¶ 2019 Federal poverty level thresholds were calculated on the basis of U.S. Department of Health and Human Services Federal poverty level guidelines. (https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/prior-hhs-poverty-guidelines-federal-register-references/2019-poverty-guidelines).

*** Physically abused or harassed by a sexual partner.

††† Physically forced or verbally threatened to have sex when they did not want to.

§§§ Measured by the 12-item Multidimensional Scale of Perceived Social Support. Responses to the five questions were summed and averaged (range = 1–5) (Cronbach's alpha = 0.92).

¶¶¶ Incarceration was defined as having been held in a detention center, jail, or prison for >24 hours.

**** Sex work was defined as receiving money or goods in exchange for sex during the past 12 months.

harm that can interfere with access to basic needs for transgender women. In this analysis, transgender women experiencing various forms of abuse, either physical intimate partner violence or forced sex, experienced longer duration of homelessness. More than half of transgender women who experienced any form of abuse during the past 12 months reported experiencing homelessness. These findings are supported by an analysis that reported rates of lifetime homelessness in the 2015 U.S. Transgender Survey were associated with all forms of interpersonal violence, including physical and psychological violence, and experiencing forced sex during the past 12 months (*33*). Certain transgender women might experience housing instability because of abusive partners (*34*). Transgender women who have experienced intimate partner violence might be deterred from seeking or have difficulty accessing intimate partner violence services because of transphobic discrimination or rigidly gender-segregated services (*34*). Further, transgender women often experience physical or sexual violence in homeless shelters; unsafe shelters can force them out on the street (*35*).

Another social determinant, housing discrimination, was prevalent in the sample; transgender women who were

evicted or denied housing because they are transgender or gender-nonconforming had higher odds of experiencing longer duration of homelessness. These results are consistent with previous findings (*9*,*26*) illustrating that systemic factors driving housing instability (e.g., economic insecurity, housing discrimination, and antitransgender discrimination) are known barriers to housing for transgender women (*36*). The Fair Housing Act prohibits discrimination on the basis of gender identity (https://www.hud.gov/program_offices/fair_housing_equal_opp/fair_housing_act_overview); transgender women who have experienced housing discrimination can file a complaint with the U.S. Department of Housing and Urban Development (https://www.hud.gov/program_offices/fair_housing_equal_opp/online-complaint). Further, homeless shelters and domestic violence shelters and services can consider expanding services for transgender clients, ensure shelters and services are safe, and provide cultural competency training to staff members to better support transgender clients.

Incarceration was associated with longer duration of homelessness among the transgender women participating in this study. Incarceration among transgender women has been found to affect mental health (e.g., anxiety and depression) and substance use, and has been associated with homelessness, sex work, school dropout, and multiple incarcerations (*29*). Transgender women who are incarcerated experience victimization, harassment, and violence at very high rates (*37*). They are often misgendered, denied health care, punished for expressing their gender identity, and susceptible to sexual violence (https://www.aclu.org/news/lgbtq-rights/sex-work-is-real-work-and-its-time-to-treat-it-that-way). Additionally, the majority of NHBS-Trans participants were Black or Hispanic transgender women, who are targeted by law enforcement and incarcerated at high rates (*38*). Law enforcement policies and priorities that criminalize homelessness make transgender women experiencing homelessness, especially transgender women of color, vulnerable to harassment, policing, and incarceration (*38*). Addressing violence toward transgender women through education and training, public awareness, and policies that criminalize discrimination of transgender persons in schools, the workplace, and housing can positively affect housing stability and quality of life for transgender women.

Approximately half of transgender women who had exchanged sex for money or drugs had experienced 30–365 nights homeless. Discrimination and stigma in the workplace are often barriers to employment for transgender women, limiting options for income and encouraging engagement in sex work (*39*). Because of the illegality of sex work in the United States, sex work and incarceration are highly correlated, and both are associated with mental health conditions and sexual behaviors associated with HIV transmission (*40*). A cyclical relation between sex work and housing instability can exist if transgender women engage in sex work to generate income for housing. This type of survival sex for income interferes with housing stability and can affect mental and physical health outcomes and can increase chances of acquiring HIV infection (*26*,*41*). Another study found that transgender women who participated in sex work experienced lower social support and higher rates of violence, stigma, and HIV than their non–sex-working peers (*42*,*43*). Decriminalizing sex work and decreasing stigma and victimization could reduce criminal justice involvement among transgender women and facilitate employment and housing opportunities.

The findings in this study demonstrated that multiple personal characteristics and social factors are associated with longer duration of homelessness; providing stable housing for transgender women could improve physical and mental health outcomes and safety. Specific housing interventions could address different durations of homelessness, either short-term or episodic or longer-term or chronic homelessness. Transgender women who experience less than 30 days homeless could benefit from emergency assistance programs that provide support and services for rent or utilities to prevent eviction, the need to move frequently, couch surfing, and other circumstances that could lead to longer-term homelessness. Despite being illegal, stigma and discrimination in housing and employment based on transphobia (*11*) limit options for transgender women, decreasing opportunities for engagement in the licit economy. Stable housing, using the Housing First model that prioritizes safe and affordable housing with wrap-around social services for mental health and substance use, can improve quality of life and HIV outcomes (*44*). Approaches to treatment using a trauma-informed care model (https://store.samhsa.gov/sites/default/files/d7/priv/sma14-4884.pdf) specifically designed for transgender women can also be implemented to address a history of abuse and violence often experienced by transgender women. Structural interventions that address HIV prevention among transgender women need to focus on stigma, discrimination, and poverty (*45*). Forty-two percent of the participants in NHBS-Trans were HIV-positive and might qualify for the Housing Opportunities for Persons with AIDS (HOPWA) program (https://www.hud.gov/program_offices/comm_planning/hopwa). CDC funded a toolkit, developed by community partners, for providing HIV Prevention Services to Transgender Women of Color (https://www.cdc.gov/hiv/effective-interventions/prevent/toolkit-transgender-women-of-color/index.html). This toolkit, for use by community organizations, health departments, clinics,

and other organizations that provide services for transgender women of color, outlines services and interventions to address important topics (e.g., healthy partner relationships, sexual risk behaviors, stress, social support, gender affirmation, HIV or STI knowledge, and engagement in care). Employing these varied evidence-based interventions could address certain social factors and personal characteristics affecting housing stability among transgender women.

Limitations

General limitations for the NHBS-Trans are available in the overview and methodology report of this supplement (*16*). The findings in this report are subject to at least five additional limitations. First, the sample is not representative of transgender women residing outside of the seven urban areas. Because of the hard-to-reach nature of transgender women, the data might not be representative of all transgender women residing in the seven urban areas. Second, the data are self-reported and certain measures, such as psychological distress, exchange sex, or experience of abuse, might be subject to social desirability biases resulting in underestimates of these factors (*46*,*47*). Third, the sample size of transgender women experiencing 1–29 days homeless was limited, thus, inferences from this group to all transgender women cannot be made. Fourth, the question assessing homelessness is limited and does not include transitory instances of housing instability (e.g., couch surfing) or information on participants experiencing homelessness for longer than 12 months. To address this limitation, data on homelessness were stratified by duration of homelessness to identify differences possibly related to transitional or episodic homelessness (*14*). Finally, the cross-sectional study design limits the ability to establish causality and prohibits analysis of the dynamic nature of housing instability.

Conclusions

Transgender women experience housing instability associated with personal characteristics and social factors; these factors increase behavioral risk factors for HIV infection and poor health outcomes. Specifically, social factors (e.g., living below the Federal poverty level, experiences with violence and abuse, and lack of social support) were associated with longer duration of housing instability and homelessness. Further, history of incarceration, exchanging sex for money or drugs, experience with being rejected from housing, or being evicted were all factors associated with housing instability and homelessness. These social factors are entwined in societal views of discrimination and stigma of transgender women. Interventions that address personal characteristics and social factors and promote positive attitudes toward transgender women can help to achieve housing stability and can improve mental and physical health and HIV outcomes for transgender women. Further, integrating housing services, behavioral health services, employment, gender-affirming medical care, and clinical care are important to improve the living circumstances and quality of life for transgender women.

Acknowledgment

Carol Yen-Chin Lin, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, CDC.

National HIV Behavioral Surveillance Among Transgender Women Study Group

Narquis Barak, CrescentCare; Kathleen A. Brady, Philadelphia Department of Public Health; Sarah Braunstein, New York City Department of Health and Mental Hygiene; Jasmine Davis, CrescentCare; Sara Glick, University of Washington, School of Medicine, Division of Allergy and Infectious Diseases, Public Health – Seattle & King County, HIV/STD Program; Andrea Harrington, Philadelphia Department of Public Health; Jasmine Lopez, New York City Department of Health and Mental Hygiene; Yingbo Ma, Los Angeles County Department of Public Health; Aleks Martin, Public Health – Seattle & King County, HIV/STD Program; Genetha Mustaafaa, Georgia Department of Public Health; Tanner Nassau, Philadelphia Department of Public Health; Gia Olaes, Los Angeles County Department of Public Health; Jennifer Reuer, Washington State Department of Health; Alexis Rivera, New York City Department of Health and Mental Hygiene; William T. Robinson, Louisiana State University Health Science Center in New Orleans – School of Public Health, Louisiana Office of Public Health STD/HIV/Hepatitis Program; Ekow Kwa Sey, Los Angeles County Department of Public Health; Sofia Sicro, San Francisco Department of Public Health; Brittany Taylor, Georgia Department of Public Health; Dillon Trujillo, San Francisco Department of Public Health; Erin Wilson, San Francisco Department of Public Health; Pascale Wortley, Georgia Department of Public Health.

Conflicts of Interest

All authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. No potential conflicts of interest were disclosed.

References

1. Aidala AA, Wilson MG, Shubert V, et al. Housing status, medical care, and health outcomes among people living with HIV/AIDS: a systematic review. Am J Public Health 2016;106:e1–23. PMID:26562123 https://doi.org/10.2105/AJPH.2015.302905
2. Herman JL, Flores AR, O'Neill KK. How many adults and youth identify as transgender in the United States? [Internet] Los Angeles, CA: UCLA School of Law, Williams Institute; 2022. https://williamsinstitute.law.ucla.edu/publications/trans-adults-united-states/
3. CDC. HIV infection, risk, prevention, and testing behaviors among transgender women—National HIV Behavioral Surveillance, 7 U.S. cities, 2019–2020. Atlanta, GA: US Department of Health and Human Services, CDC; 2021. https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-special-report-number-27.pdf

4. Becasen JS, Denard CL, Mullins MM, Higa DH, Sipe TA. Estimating the prevalence of HIV and sexual behaviors among the U.S. transgender population: a systematic review and meta-analysis, 2006–2017. Am J Public Health 2019;109:e1–8. PMID:30496000 https://doi.org/10.2105/AJPH.2018.304727
5. Lee K, Trujillo L, Olansky E, et al.; National HIV Behavioral Surveillance among Transgender Women Study Group; National HIV Behavioral Surveillance among Transgender Women Study Group. Factors associated with use of HIV prevention and health care among transgender women —Seven Urban Areas, 2019–2020. MMWR Morb Mortal Wkly Rep 2022;71:673–9. PMID:35588092 https://doi.org/10.15585/mmwr.mm7120a1
6. Blosnich JR, Marsiglio MC, Dichter ME, et al. Impact of social determinants of health on medical conditions among transgender veterans. Am J Prev Med 2017;52:491–8. PMID:28161034 https://doi.org/10.1016/j.amepre.2016.12.019
7. Fletcher JB, Kisler KA, Reback CJ. Housing status and HIV risk behaviors among transgender women in Los Angeles. Arch Sex Behav 2014;43:1651–61. PMID:25190499 https://doi.org/10.1007/s10508-014-0368-1
8. Glick JL, Lopez A, Pollock M, Theall KP. Housing insecurity and intersecting social determinants of health among transgender people in the USA: a targeted ethnography. Int J Transgend Health 2020;21:337–49. PMID:34993513 https://doi.org/10.1080/26895269.2020.1780661
9. Kattari SK, Whitfield DL, Walls NE, Langenderfer-Magruder L, Ramos D. Policing gender through housing and employment discrimination: comparison of discrimination experiences of transgender and cisgender LGBQ individuals. J Soc Social Work Res 2016;7:427–47. https://doi.org/10.1086/686920
10. Barbee H, Deal C, Gonzales G. Anti-transgender legislation—a public health concern for transgender youth. JAMA Pediatr 2022;176:125–6. PMID:34747979 https://doi.org/10.1001/jamapediatrics.2021.4483
11. Lewis DC, Flores AR, Haider-Markel DP, Miller PR, Tadlock BL, Taylor JK. Degrees of acceptance: variation in public attitudes toward segments of the LGBT community. Polit Res Q 2017;70:861–75. https://doi.org/10.1177/1065912917717352
12. Parker K, Horowitz J, Brown A. Americans' complex views on gender identity and transgender issues. Washington, DC: Pew Research Center; 2022. https://www.pewresearch.org/social-trends/2022/06/28/americans-complex-views-on-gender-identity-and-transgender-issues/
13. Forney JC, Lombardo S, Toro PA. Diagnostic and other correlates of HIV risk behaviors in a probability sample of homeless adults. Psychiatr Serv 2007;58:92–9. PMID:17215418 https://doi.org/10.1176/ps.2007.58.1.92
14. Kuhn R, Culhane DP. Applying cluster analysis to test a typology of homelessness by pattern of shelter utilization: results from the analysis of administrative data. Am J Community Psychol 1998;26:207–32. PMID:9693690 https://doi.org/10.1023/A:1022176402357
15. Carter SP, Montgomery AE, Henderson ER, et al. Housing instability characteristics among transgender veterans cared for in the Veterans Health Administration, 2013–2016. Am J Public Health 2019;109:1413–8. PMID:31415197 https://doi.org/10.2105/AJPH.2019.305219
16. Kanny D, Lee K, Olansky E, et al. Overview and methodology of the National HIV Behavioral Surveillance Among Transgender Women—seven urban areas, United States, 2019–2020. In: National HIV Behavioral Surveillance Among Transgender Women—seven urban areas, United States, 2019–2020. MMWR Suppl 2024;73(No. Suppl-1)1–8.
17. US Department of Health and Human Services. Data collection standards for race, ethnicity, primary language, sex, and disability status. Washington, DC: US Department of Health and Human Services, Office of Minority Health; 2018. https://minorityhealth.hhs.gov/data-collection-standards-race-ethnicity-primary-language-sex-and-disability-status
18. Kessler RC, Barker PR, Colpe LJ, et al. Screening for serious mental illness in the general population. Arch Gen Psychiatry 2003;60:184–9. PMID:12578436 https://doi.org/10.1001/archpsyc.60.2.184
19. Zimet GD, Powell SS, Farley GK, Werkman S, Berkoff KA. Psychometric characteristics of the Multidimensional Scale of Perceived Social Support. J Pers Assess 1990;55:610–7. PMID:2280326 https://doi.org/10.1207/s15327752jpa5503&4_17
20. Trujillo MA, Perrin PB, Sutter M, Tabaac A, Benotsch EG. The buffering role of social support on the associations among discrimination, mental health, and suicidality in a transgender sample. Int J Transgenderism 2017;18:39–52. PMID:29904324 https://doi.org/10.1080/15532739.2016.1247405
21. Eastwood EA, Nace AJ, Hirshfield S, Birnbaum JM. Young transgender women of color: homelessness, poverty, childhood sexual abuse and implications for HIV care. AIDS Behav 2021;25(Suppl 1):96–106. PMID:31865517 https://doi.org/10.1007/s10461-019-02753-9
22. Wilson EC, Chen YH, Arayasirikul S, et al. Differential HIV risk for racial/ethnic minority trans*female youths and socioeconomic disparities in housing, residential stability, and education. Am J Public Health 2015;105(Suppl 3):e41–7. PMID:25905826 https://doi.org/10.2105/AJPH.2014.302443
23. Aparicio-García ME, Díaz-Ramiro EM, Rubio-Valdehita S, López-Núñez MI, García-Nieto I. Health and well-being of cisgender, transgender and non-binary young people. Int J Environ Res Public Health 2018;15:2133. PMID:30274141 https://doi.org/10.3390/ijerph15102133
24. Garofalo R, Johnson AK, Kuhns LM, Cotten C, Joseph H, Margolis A. Life skills: evaluation of a theory-driven behavioral HIV prevention intervention for young transgender women. J Urban Health 2012;89:419–31. PMID:22223033 https://doi.org/10.1007/s11524-011-9638-6
25. Johns MM, Lowry R, Andrzejewski J, et al. Transgender identity and experiences of violence victimization, substance use, suicide risk, and sexual risk behaviors among high school students—19 states and large urban school districts, 2017. MMWR Morb Mortal Wkly Rep 2019;68:67–71. PMID:30677012 https://doi.org/10.15585/mmwr.mm6803a3
26. Kattari SK, Begun S. On the margins of marginalized: transgender homelessness and survival sex. Affilia 2017;32:92–103. https://doi.org/10.1177/0886109916651904
27. Valentine SE, Shipherd JC. A systematic review of social stress and mental health among transgender and gender non-conforming people in the United States. Clin Psychol Rev 2018;66:24–38. PMID:29627104 https://doi.org/10.1016/j.cpr.2018.03.003
28. Flentje A, Leon A, Carrico A, Zheng D, Dilley J. Mental and physical health among homeless sexual and gender minorities in a major urban U.S. city. J Urban Health 2016;93:997–1009. PMID:27699581 https://doi.org/10.1007/s11524-016-0084-3
29. Hughto JMW, Reisner SL, Kershaw TS, et al. A multisite, longitudinal study of risk factors for incarceration and impact on mental health and substance use among young transgender women in the USA. J Public Health (Oxf) 2019;41:100–9. PMID:29474682 https://doi.org/10.1093/pubmed/fdy031
30. Budge SL, Adelson JL, Howard KA. Anxiety and depression in transgender individuals: the roles of transition status, loss, social support, and coping. J Consult Clin Psychol 2013;81:545–57. PMID:23398495 https://doi.org/10.1037/a0031774
31. Durbin A, Nisenbaum R, Kopp B, O'Campo P, Hwang SW, Stergiopoulos V. Are resilience and perceived stress related to social support and housing stability among homeless adults with mental illness? Health Soc Care Community 2019;27:1053–62. PMID:30734374 https://doi.org/10.1111/hsc.12722

32. Hotton AL, Perloff J, Paul J, et al. Patterns of exposure to socio-structural stressors and HIV care engagement among transgender women of color. AIDS Behav 2020;24:3155–63. PMID:32335760 https://doi.org/10.1007/s10461-020-02874-6
33. King WM, Restar A, Operario D. Exploring multiple forms of intimate partner violence in a gender and racially/ethnically diverse sample of transgender adults. J Interpers Violence 2021;36:NP10477–98. PMID:31526070 https://doi.org/10.1177/0886260519876024
34. Messinger AM, Kurdyla V, Guadalupe-Diaz XL. Intimate partner violence help-seeking in the U.S. transgender survey. J Homosex 2022;69:1042–65. PMID:33871317 https://doi.org/10.1080/00918369.2021.1901506
35. Mottet L, Ohle JM. Transitioning our shelters: making homeless shelters safe for transgender people. J Poverty 2006;10:77–101. https://doi.org/10.1300/J134v10n02_05
36. Beltran T, Allen AM, Lin J, Turner C, Ozer EJ, Wilson EC. Intersectional discrimination is associated with housing instability among trans women living in the San Francisco Bay area. Int J Environ Res Public Health 2019;16:4521. PMID:31731739 https://doi.org/10.3390/ijerph16224521
37. Reisner SL, Bailey Z, Sevelius J. Racial/ethnic disparities in history of incarceration, experiences of victimization, and associated health indicators among transgender women in the U.S. Women Health 2014;54:750–67. PMID:25190135 https://doi.org/10.1080/03630242.2014.932891
38. Yarbrough D. The carceral production of transgender poverty: how racialized gender policing deprives transgender women of housing and safety. Punishm Soc 2023;25:141–61. https://doi.org/10.1177/14624745211017818
39. Grant JM, Mottet LA, Tanis J, Harrison J, Herman JL, Keisling M. Injustice at every turn: a report of the National Transgender Discrimination Survey. Washington, DC: National Center for Transgender Equality and National Gay and Lesbian Task Force; 2011. https://transequality.org/sites/default/files/docs/resources/NTDS_Report.pdf
40. Brennan J, Kuhns LM, Johnson AK, Belzer M, Wilson EC, Garofalo R; Adolescent Medicine Trials Network for HIV/AIDS Interventions. Syndemic theory and HIV-related risk among young transgender women: the role of multiple, co-occurring health problems and social marginalization. Am J Public Health 2012;102:1751–7. PMID:22873480 https://doi.org/10.2105/AJPH.2011.300433
41. Operario D, Soma T, Underhill K. Sex work and HIV status among transgender women: systematic review and meta-analysis. J Acquir Immune Defic Syndr 2008;48:97–103. PMID:18344875 https://doi.org/10.1097/QAI.0b013e31816e3971
42. Budhwani H, Hearld KR, Butame SA, Naar S, Tapia L, Paulino-Ramírez R. Transgender women in Dominican Republic: HIV, stigma, substances, and sex work. AIDS Patient Care STDS 2021;35:488–94. PMID:34762515 https://doi.org/10.1089/apc.2021.0127
43. Milner AN, Hearld KR, Abreau N, Budhwani H, Mayra Rodriguez-Lauzurique R, Paulino-Ramirez R. Sex work, social support, and stigma: experiences of transgender women in the Dominican Republic. Int J Transgenderism 2019;20:403–12. PMID:32999625 https://doi.org/10.1080/15532739.2019.1596862
44. Padgett DK, Henwood B, Tsemberis S. Housing first: ending homelessness, transforming systems, and changing lives. Oxford University Press; 2015.
45. Poteat T, Malik M, Scheim A, Elliott A. HIV prevention among transgender populations: knowledge gaps and evidence for action. Curr HIV/AIDS Rep 2017;14:141–52. PMID:28752285 https://doi.org/10.1007/s11904-017-0360-1
46. Latkin CA, Edwards C, Davey-Rothwell MA, Tobin KE. The relationship between social desirability bias and self-reports of health, substance use, and social network factors among urban substance users in Baltimore, Maryland. Addict Behav 2017;73:133–6. PMID:28511097 https://doi.org/10.1016/j.addbeh.2017.05.005
47. Rao A, Tobin K, Davey-Rothwell M, Latkin CA. Social desirability bias and prevalence of sexual HIV risk behaviors among people who use drugs in Baltimore, Maryland: implications for identifying individuals prone to underreporting sexual risk behaviors. AIDS Behav 2017;21:2207–14. PMID:28509997 https://doi.org/10.1007/s10461-017-1792-8

Prevalence of Discrimination and the Association Between Employment Discrimination and Health Care Access and Use — National HIV Behavioral Surveillance Among Transgender Women, Seven Urban Areas, United States, 2019–2020

Amy R. Baugher, MPH[1]; Evelyn Olansky, MPH[1,2,3]; Larshie Sutter, MPH[1,4]; Susan Cha, PhD[1]; Rashunda Lewis, MPH[1]; Elana Morris, MPH[1]; Christine Agnew-Brune, PhD[1]; Lindsay Trujillo, MPH[1,2,3]; Ebony Respress, PhD[1]; Kathryn Lee, MPH[1]; National HIV Behavioral Surveillance Among Transgender Women Study Group

[1]*Division of HIV Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, CDC, Atlanta, Georgia;* [2]*Social & Scientific Systems, Inc., Silver Spring, Maryland;* [3]*ICF, Fairfax, Virginia;* [4]*Oak Ridge Institute for Science and Education, Oak Ridge, Tennessee*

Abstract

Transgender women experience discrimination in many settings, including in employment. Because employment and health insurance are intertwined in the United States, employment discrimination might be related to lower health insurance coverage and health care use, including gender-affirming care. This analysis used data from transgender women (N = 1,608) in seven urban areas in the United States collected during 2019–2020 to present the prevalence of six discrimination types (employment, housing, bathroom, businesses, health care, and abuse) and to measure the association between employment discrimination (defined as trouble getting a job or fired due to being transgender) and sociodemographic characteristics, health care access, and health care use. Log-linked Poisson regression models were conducted to estimate adjusted prevalence ratios and 95% CIs. Seven in 10 transgender women experienced at least one type of discrimination during the past 12 months. During the same period, 9.9% of transgender women were fired and 32.4% had trouble getting a job because of being transgender. Employment discrimination was associated with younger age and lower socioeconomic status. Having trouble getting a job was associated with health care access and health care use factors, including having no health insurance or having Medicaid only, having an unmet medical need because of cost, never having transgender-specific care, and having an unmet need for gender-affirming procedures. These findings suggest that employment discrimination contributes to transgender women's economic marginalization and their ability to obtain adequate health insurance coverage and achieve their transition goals. These findings might help guide efforts that protect transgender women's right to pursue their work, health, and life goals without discrimination.

Introduction

Transgender women have historically been marginalized in public spaces and institutions, including the workplace (*1*). In the United States, discrimination against job applicants or employees by employers on the basis of gender identity or transgender status is illegal (*2*), yet discrimination persists (*3*,*4*). Employment discrimination operates as a multilevel phenomenon (*5*–*7*): structural (e.g., law), organizational (e.g., workplace policies regarding identification and legal names), interpersonal (e.g., inappropriate questions from coworkers), and individual (e.g., health and financial outcomes). Because employment and health insurance are intertwined in the United States, employment discrimination might be related to lower health insurance coverage and care use (*8*), including gender-affirming care, which is important for transgender women's mental health (*9*), quality of life (*10*), transition goals (*11*), and HIV prevention and care engagement (*12*). In addition to employment discrimination, discrimination of any type is related to delays in health care (*13*,*14*), suicidal ideation (*15*), and negative health outcomes (*1*) among transgender women. Therefore, it is important to understand the prevalence of multiple types of discrimination that transgender women experience. Previous reports on discrimination among transgender women focus on transgender women who are predominantly White and have higher socioeconomic status (SES) (*3*); this analysis was conducted to understand discrimination in a diverse and lower SES population.

The objectives of this analysis were to describe the prevalence of multiple types of discrimination toward transgender women and to measure the characteristics of employment discrimination and its association with health care access and use. Policymakers can use these results to guide civil rights legislation efforts.

Corresponding author: Amy R. Baugher, Behavioral and Clinical Surveillance Branch, Division of HIV Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, CDC. Telephone: 404-639-1956; Email: yda1@cdc.gov.

Methods

Data Source

This report includes survey data from the National HIV Behavioral Surveillance Among Transgender Women (NHBS-Trans) conducted by CDC during June 2019–February 2020 to assess health and prevention behaviors and HIV prevalence (*16*). Eligible participants completed an interviewer-administered questionnaire and were offered HIV testing. Additional information about NHBS-Trans eligibility criteria, data collection, and biologic testing is available in the overview and methodology report of this supplement (*17*). The NHBS-Trans protocol, questionnaire, and documentation are available at https://www.cdc.gov/hiv/statistics/systems/nhbs/methods-questionnaires.html#trans.

Applicable local institutional review boards in each participating project area approved NHBS-Trans activities. The final NHBS-Trans sample included 1,608 transgender women in seven urban areas in the United States (Atlanta, Georgia; Los Angeles, California; New Orleans, Louisiana; New York, New York; Philadelphia, Pennsylvania; San Francisco, California; and Seattle, Washington) recruited using respondent-driven sampling. This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable Federal law and CDC policy.*

Measures

Six measures for discrimination types were assessed: 1) employment (fired or had trouble getting a job), 2) housing (denied housing or evicted), 3) bathroom (denied bathroom access), 4) discrimination in businesses (treated poorly in businesses), 5) health care (denied or given lower-quality health care), and 6) abuse (verbally abused or physically abused). Other measures included health outcomes, health care access and use, and gender-affirming care.

Demographics and social determinants of health were measured, including age, race and ethnicity, poverty, homelessness, severe food insecurity, incarceration, disability, and sex work. Definitions of discrimination, demographics, and social determinants of health are available in the overview report of this supplement (*17*). Health care access variables included currently having health insurance, type of health insurance, living in a state where Medicaid laws explicitly covered gender-affirming care in 2019 when data were collected (*18*), having a usual source of care, unmet need for health care because of cost, health insurance coverage for hormone therapy among transgender women with health insurance, and transgender-specific health care. Health care use included visiting any health care provider during the past 12 months, unmet need for hormone therapy, using nonprescription hormones among transgender women who used any hormones, and unmet need for gender-affirmation procedures (Table 1).

Analysis

Log-linked Poisson regression models with generalized estimating equations clustered on recruitment chain were used to obtain adjusted prevalence ratios and 95% CIs. Referent groups were selected based on who was expected to have the most favorable outcome. Models comparing group differences in employment discrimination were adjusted for urban area and network size (*19*). Models comparing trouble getting a job to health care access and use outcomes were adjusted for urban area, network size, and age. Certain categories were not modeled because of sparse data. Statistical significance was determined by whether the CI crossed the null of 1.0. Analyses were conducted using SAS software (version 9.4; SAS Institute).

Results

Overall, 69.9% of 1,608 transgender women in seven urban areas experienced at least one type of discrimination during the past 12 months because of being transgender. Among transgender women, 53.9% were verbally abused; 39.1% received poorer service in restaurants, stores, or businesses; 32.4% had trouble getting a job; 26.6% were physically abused; 22.3% were denied access to a gender-affirming bathroom; 13.9% were denied housing or evicted; 10.8% were denied or given lower quality health care; and 9.9% were fired from a job (Figure).

Transgender women aged 18–29 years were more likely to be fired because of being transgender than those who were aged ≥50 years (Table 2). Transgender women who reported experiencing homelessness and severe food insecurity were more likely to have been fired during the past year because of being transgender than those who did not have those experiences.

Transgender women aged <50 years were more likely to have trouble getting a job than transgender women who were aged ≥50 years. Transgender women who had income at or below the Federal poverty level, experienced homelessness, experienced severe food insecurity during the past year, had been incarcerated during the past year, had received money or goods in exchange for sex during the past year, or had a disability were more likely to have had trouble getting a job than transgender women who did not have those experiences.

* 45 C.F.R. part 46.102(l)(2), 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.

TABLE 1. Measures, questions, and analytic coding for prevalence of discrimination and the association between employment discrimination and health care access and use, by type of discrimination and selected characteristics — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,* United States, 2019–2020

Measure	Question	Analytic coding
Discrimination type		
Employment discrimination	In the past 12 months, have you been fired from a job because you are transgender or gender nonconforming? Had trouble getting a job because you are transgender or gender nonconforming?	Yes or no
Bathroom discrimination past 12 months	In the past 12 months, have you been denied access to bathrooms that were appropriate to your gender identity?	Yes or no
Housing discrimination past 12 months	In the past 12 months, have you been denied housing or been evicted because you are transgender or gender nonconforming?	Yes or no
Health care discrimination past 12 months	In the past 12 months, have you been denied or given lower quality health care because you are transgender or gender nonconforming?	Yes or no
Discrimination in businesses	In the past 12 months, have you received poorer services than other people in restaurants, stores, or businesses because you are transgender or gender nonconforming?	Yes or no
Abuse	In the past 12 months, have you been verbally abused or harassed because of your gender identity or presentation? Been physically abused or harassed because of your gender identity or presentation?	Yes or no
Health outcome		
HIV status	NHBS biologic HIV test result	Negative, positive, unknown result, or did not consent to test
Disability†	Are you deaf or do you have serious difficulty hearing? Are you blind or have serious difficulty seeing, even when wearing glasses? Because of a physical, mental, or emotional condition, do you have serious difficulty concentrating, remembering, or making decisions? Do you have serious difficulty walking or climbing stairs? Do you have difficulty dressing or bathing? Because of a physical, mental, or emotional condition, do you have difficulty doing errands alone, such as visiting a doctor's office or shopping?	Yes or no
Health care access and use		
State Medicaid laws explicitly cover gender-affirming care, 2019§	City of residence	Yes or no
Usual source of health care	Is there a place that you usually go when you are sick or you need advice about your health? Please do not include Internet websites.	Yes or no
Visited health care provider past 12 months	In the past 12 months, that is, since [fill with interview month, formatted as text] of last year, have you seen a doctor, nurse, or other health care provider?	Yes or no
Unmet need for health care because of cost past 12 months	During the past 12 months, was there any time when you needed medical care but didn't get it because you couldn't afford it?	Yes or no
Comfort with health care provider	Do you have a health care provider with whom you feel comfortable discussing gender-related health issues?	Yes or no
Gender-affirming care		
Unmet need for hormone therapy	Have you ever taken hormones for gender transition or affirmation? Are you currently taking hormones for gender transition or affirmation? Would you like to take hormones for gender transition or affirmation?	Yes or no
Health insurance covers hormone therapy	Does your current health insurance cover hormones for gender transition or affirmation?	Yes or no
Used nonprescription hormones past 12 months	In the past 12 months, have you used hormones that were not prescribed to you by a doctor or other health care professional?	Yes or no
Unmet need for gender-affirmation procedure	Have you ever had any type of surgery for gender transition or affirmation? Do you plan or want to get additional surgeries for gender transition or affirmation? Do you want to have surgery for gender transition or affirmation?	Yes or no

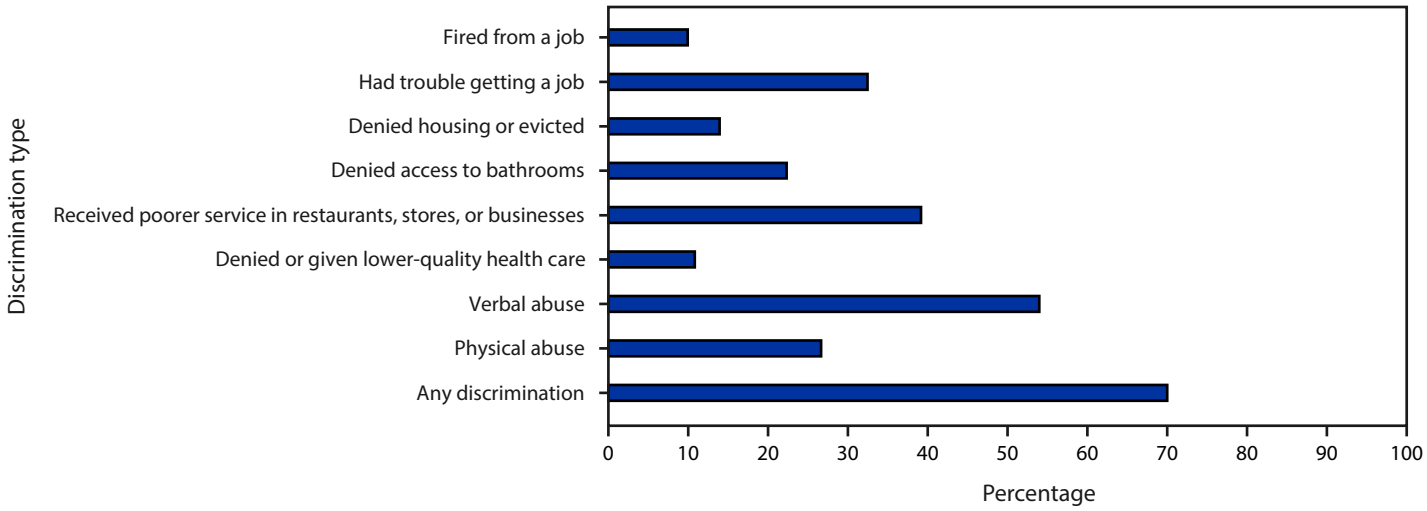
Abbreviation: NHBS = National HIV Behavioral Surveillance.

* Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.

† To assess difficulty in six basic domains of functioning (hearing, vision, cognition, walking, self-care, and independent living), based on U.S. Department of Health and Human Services disability data standard (https://aspe.hhs.gov/reports/hhs-implementation-guidance-data-collection-standards-race-ethnicity-sex-primary-language-disability-0).

§ State Medicaid coverage as of 2019 was determined by the Williams Institute's October 2019 report (https://williamsinstitute.law.ucla.edu/wp-content/uploads/Medicaid-Gender-Care-Oct-2019.pdf).

FIGURE. Prevalence of types of transgender-specific discrimination during the past 12 months among transgender women — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,* United States, 2019–2020†



* Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.
† N = 1,608 participants.

Transgender women who were Black or African American (Black) or multiracial were less likely to have trouble getting a job than White transgender women. (Persons of Hispanic or Latina [Hispanic] origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.)

Having trouble getting a job was related to health care access and use (Table 3). Among transgender women who had trouble getting a job because of being transgender, 62.4% had Medicaid only, 21.6% were uninsured, and 7.2% had private health insurance only. Transgender women who had Medicaid were 1.57 times as likely to have trouble getting a job as those with private insurance only. Although most (81.5%) participants lived in states where Medicaid explicitly covers gender-affirming care, transgender women who lived in states where Medicaid does not explicitly cover this care were twice as likely to report difficulty getting a job. Transgender women who had an unmet need for health care because of cost and never had transgender-specific health care were more likely to have trouble getting a job than those who did not. Most transgender women visited a health care provider during the past year, were currently taking hormones, or had insurance coverage for hormones; no differences were found because of high prevalence of these variables. Among transgender women who used any hormones, those who used nonprescription hormones were 1.24 times as likely to have had trouble getting a job as transgender women who did not. Transgender women who had an unmet need for gender-affirmation procedures were more likely to have trouble getting a job than those with no unmet need.

Discussion

Seven in 10 transgender women experienced transphobic discrimination, and one in three reported employment discrimination during the past year. Having trouble getting a job because of being transgender was associated with poor social determinants of health and lower health care access and use, including gender-affirming procedures.

The prevalence of discrimination in NHBS-Trans had certain similarities to and differences from previous studies, including the 2015 U.S. Transgender Survey (USTS) (*3*). Compared with USTS participants, NHBS-Trans participants reported similar prevalence for employment discrimination (32% NHBS-Trans versus 30% USTS); higher prevalence of bathroom discrimination (22% versus 9%), poorer treatment in businesses (39% versus 31%), verbal abuse (59% versus 12%), and physical abuse (27% versus 1%); and lower prevalence of housing discrimination (13% versus 23%) and health care discrimination (11% versus 33%). These differences might be partially explained by the sociodemographic composition of these two surveys: participants in the NHBS-Trans sample were predominantly Black or Hispanic and had lower SES, whereas participants in the USTS sample were predominantly White and had higher SES. In addition, during 2015–2019, transgender persons reported increased discrimination and minority stress because of a political climate that was increasingly hostile toward transgender persons (*20*). Finally, NHBS-Trans and USTS had differences in their questionnaires.

Employment discrimination occurs at the overlapping nexus of poverty, homelessness, incarceration, health insurance,

TABLE 2. Number and percentage of transgender women experiencing transgender-specific employment discrimination during the past 12 months, by selected characteristics — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,* United States, 2019–2020†

Characteristic	Total no.	Fired from a job (n = 158)		Trouble getting a job (n = 513)	
		No. (%)§	aPR¶ (95% CI)	No. (%)§	aPR¶ (95% CI)
Age group, yrs					
18–29	**496**	64 (12.9)	1.71 (1.08–2.71)	214 (43.1)	2.47 (1.97–3.09)**
30–39	**461**	45 (9.7)	1.36 (0.76–2.42)	149 (32.3)	1.93 (1.53–2.43)**
40–49	**307**	26 (8.5)	1.22 (0.75–1.96)	92 (30.0)	1.71 (1.42–2.06)**
≥50	**343**	23 (6.7)	Ref	58 (16.9)	Ref
Race and ethnicity††					
American Indian or Alaska Native	**17**	2 (11.8)	—§§	5 (29.4)	—
Asian	**30**	3 (10.0)	—	4 (13.3)	—
Black or African American	**569**	54 (9.5)	1.07 (0.68–1.69)	125 (22.0)	0.54 (0.40–0.72)**
Native Hawaiian or other Pacific Islander	**42**	1 (2.4)	—	6 (14.3)	—
White	**180**	19 (10.6)	Ref	79 (43.9)	Ref
Multiple races	**124**	8 (6.5)	—	30 (24.2)	0.63 (0.47–0.86)**
Hispanic or Latina	**643**	71 (11.0)	1.28 (0.79–2.08)	263 (40.9)	0.90 (0.73–1.11)
Poverty¶¶					
Above Federal poverty level	**585**	46 (7.9)	Ref	140 (23.9)	Ref
At or below Federal poverty level	**1,008**	108 (10.7)	1.29 (0.94–1.77)	365 (36.2)	1.42 (1.25–1.62)**
Homeless past 12 months***					
No	**936**	78 (8.3)	Ref	240 (25.6)	Ref
Currently homeless	**364**	49 (13.5)	1.72 (1.24–2.39)	160 (44.0)	1.67 (1.39–2.00)**
Homeless during the past 12 months but not currently	**306**	31 (10.1)	1.30 (0.89–1.89)	113 (36.9)	1.48 (1.19–1.83)**
Severe food insecurity past 12 months†††					
Yes	**637**	103 (16.2)	2.72 (2.18–3.39)	291 (45.7)	1.87 (1.59–2.20)**
No	**968**	55 (5.7)	Ref	221 (22.8)	Ref
Incarceration§§§					
Never incarcerated	**670**	69 (10.3)	Ref	209 (31.2)	Ref
Incarcerated >12 months ago	**658**	63 (9.6)	0.95 (0.75–1.21)	183 (27.8)	0.89 (0.76–1.04)
Incarcerated past 12 months ago	**277**	26 (9.4)	0.92 (0.62–1.38)	120 (43.3)	1.29 (1.16–1.45)**
Received money or goods in exchange for sex past 12 months					
Yes	**549**	54 (9.8)	1.08 (0.86–1.36)	217 (39.5)	1.45 (1.25–1.69)**
No	**1,058**	104 (9.8)	Ref	295 (27.9)	Ref
Disability status¶¶¶					
Yes	**853**	92 (10.8)	1.31 (0.99–1.72)	310 (36.3)	1.41 (1.17–1.70)**
No	**747**	66 (8.8)	Ref	200 (26.8)	Ref
NHBS HIV test result****					
Negative	**902**	95 (10.5)	Ref	337 (25.5)	Ref
Positive	**659**	61 (9.3)	1.00 (0.73–1.38)	168 (37.4)	0.80 (0.69–0.94)**

Abbreviations: aPR = adjusted prevalence ratio; NHBS = National HIV Behavioral Surveillance; Ref = referent group.

* Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.

† N = 1,608 participants. Numbers might not sum to totals because of missing data.

§ Row percentages.

¶ Models are adjusted for network size and urban area.

** Statistically significant; 95% CIs do not cross the null of 1.0.

†† Persons of Hispanic or Latina (Hispanic) origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.

§§ Models were not conducted for fields with sparse data.

¶¶ 2019 Federal poverty level thresholds were calculated on the basis of U.S. Department of Health and Human Services Federal poverty level guidelines (https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/prior-hhs-poverty-guidelines-federal-register-references/2019-poverty-guidelines).

*** Living on the street, in a shelter, in a single room occupancy hotel, or in a car.

††† Not eating for a whole day because there was not enough money for food at some point during the past 12 months.

§§§ Held in a detention center, jail, or prison for >24 hours.

¶¶¶ Serious difficulty hearing, seeing, doing cognitive tasks, walking or climbing stairs, dressing or bathing, or doing errands alone. Adjusted for age. Based on U.S. Department of Health and Human Services disability data standard (https://aspe.hhs.gov/reports/hhs-implementation-guidance-data-collection-standards-race-ethnicity-sex-primary-language-disability-0).

**** Participants with a reactive rapid NHBS HIV test result supported by a second rapid test or supplemental laboratory-based testing. Adjusted for age.

TABLE 3. Number and percentage of transgender women having trouble getting a job during the past 12 months, by health care access and use — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,* United States, 2019–2020†

Characteristic	Total no.	Trouble getting a job (n = 513) No. (%)§	Trouble getting a job (n = 513) aPR¶ (95% CI)
Health care access			
Current health insurance coverage			
Uninsured	**270**	111 (41.1)	1.74 (1.38–2.20)**
Private insurance only	**173**	37 (21.4)	Ref
Medicaid only	**910**	320 (35.2)	1.57 (1.25–1.97)**
Medicare only	**44**	4 (9.1)	—††
Multiple insurance types	**143**	21 (14.7)	0.88 (0.59–1.30)
Other insurance type	**66**	19 (28.8)	1.25 (0.80–1.95)
State Medicaid laws explicitly covered gender-affirming care, 2019§§			
Yes	**1,311**	407 (31.0)	Ref
No	**297**	106 (35.7)	2.02 (1.10–3.71)**
Usual source of health care			
Yes	**1,325**	406 (30.6)	Ref
No	**279**	105 (37.6)	1.21 (0.98–1.48)
Unmet need for health care because of cost past 12 months			
Yes	**323**	170 (52.6)	1.74 (1.47–2.07)**
No	**1,285**	343 (26.7)	Ref
Health insurance covers hormone therapy¶¶			
Yes	**1,101**	323 (29.8)	0.78 (0.57–1.06)
No	**71**	26 (37.7)	Ref
Transgender-specific health care***			
Current	**1,251**	375 (30.0)	Ref
Past but not current	**143**	50 (35.0)	1.03 (0.85–1.25)
Never	**208**	84 (40.4)	1.22 (1.03–1.44)**
Health care use			
Visited a health care provider past 12 months			
Yes	**1,502**	478 (31.8)	0.94 (0.78–1.14)
No	**105**	35 (33.3)	Ref
Unmet need for hormone therapy			
Currently taking any hormones	**1,149**	350 (30.5)	Ref
Do not want to take hormones	**121**	41 (33.9)	1.04 (0.86–1.26)
Want to take hormones	**317**	114 (36.0)	1.12 (0.93–1.36)
Used hormones, nonprescription†††			
Yes	**246**	98 (40.2)	1.24 (1.03–1.50)**
No	**1,009**	304 (30.6)	Ref
Unmet need for gender-affirmation procedures§§§			
No unmet need	**448**	101 (22.5)	Ref
Had procedures, wants more procedures	**232**	60 (25.9)	1.16 (0.87–1.53)
Wants but has not received procedures	**840**	327 (38.9)	1.44 (1.28–1.61)**

Abbreviations: aPR = adjusted prevalence ratio; Ref = Referent group.
* Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.
† N = 1,608 participants. Numbers might not sum to totals because of missing data.
§ Row percentages.
¶ Models are adjusted for network size, urban area, and age.
** Statistically significant; 95% CIs do not cross the null of 1.0.
†† Models were not conducted for fields with sparse data.
§§ State Medicaid coverage as of 2019 was determined by the Williams Institute's October 2019 report (https://williamsinstitute.law.ucla.edu/wp-content/uploads/Medicaid-Gender-Care-Oct-2019.pdf).
¶¶ Limited to persons with health insurance.
*** Has had a provider with whom they are comfortable discussing gender-related issues.
††† Limited to persons who currently use any hormones.
§§§ Vaginoplasty, orchiectomy, or breast augmentation.

disability, food insecurity, and survival sex work. These issues are interconnected. When economically marginalized transgender women are refused employment, this refusal cyclically contributes to economic hardships and might lead them to engage in survival sex work (*8*) and potentially incarceration, increasing their chances of facing further employment discrimination. For many persons, sex work might be their main form of employment, and employment discrimination also might occur as a part of sex work; however, that could not be examined in this analysis. In addition, although discriminating against job candidates with a disability is illegal, one third of transgender women who had a disability reported trouble getting a job. Previous studies found that transgender persons with disabilities experience high rates of employment discrimination (*21*), such as not receiving reasonable accommodations.

Employment discrimination was associated with poorer health care access, including being uninsured, having an unmet medical need because of cost, and never having transgender-specific health care. Private health insurance plans often have more provider choices and higher quality of care (*22*); therefore, employment might influence a person's ability and opportunity to choose a gender-affirming provider, which is associated with engagement in care and improved health behaviors (*23*,*24*). In addition, having a provider with whom the person is comfortable discussing gender issues is related to pre-exposure prophylaxis use for HIV-negative transgender women (*25*,*26*) and engagement in HIV care among transgender women with HIV infection (*24*). Because transgender women who experienced employment discrimination were more likely to have no health insurance coverage or coverage through Medicaid only, improving health care staff members' cultural competency and respect in serving transgender patients, regardless of their health insurance coverage, and increasing staff members' representation of persons of transgender experience in health care settings is important (*27*).

The majority of transgender women in NHBS-Trans had Medicaid, which is the largest source of insurance coverage for persons with HIV infection (*28*). Four in 10 transgender women had an HIV-positive diagnosis and half reported having

a disability. Therefore, the finding that Medicaid was the most common source of insurance was not unexpected. Employers also might discriminate against transgender women in part because they have low income (*29*), have an HIV-positive diagnosis (*30*), or have a disability (*21*), which is interrelated with qualifying for Medicaid.

The type of health insurance coverage that is available to transgender women is related to employment and disability status. For example, Medicaid can function as a safety net for persons experiencing sudden unemployment (*31*). Expanding Medicaid could help transgender women without health insurance qualify for Medicaid; however, Medicaid coverage of gender-affirming care varies by state (*11*,*32*). These variations can be a barrier for medically necessary health care for transgender persons with low income (*33*). In NHBS-Trans, most participants lived in states in which Medicaid programs explicitly cover gender-affirming care, with the exception of Georgia and Louisiana (*18*). This variable is likely a proxy for larger structural factors, such as negative community attitudes toward transgender persons (*34*), which can influence Medicaid policy in certain states (*35*). Furthermore, states that have not expanded Medicaid are primarily in the South, which has large numbers of Black and Hispanic residents (*36*). Historically, Medicaid policy has been shaped by structural racism, which has contributed to health inequities among Black and Hispanic persons (*36*).

Most transgender women visited a health care provider or currently use hormones; no association for these experiences was found with employment discrimination. Engagement with the health care system is usually necessary for those who desire hormones or other gender-affirming procedures; therefore, transgender women are highly motivated to seek health care and pursue hormone therapy, sometimes even at the expense of other basic needs (*37*,*38*). To achieve their transition goals, certain transgender women might even seek nonprescription hormones, which can be dangerous and unregulated (*39*,*40*), or ration prescription hormones because of cost (*41*). Improving health insurance coverage of gender-affirming care across all states could help protect transgender women from pursuing dangerous alternatives to prescription hormones. However, obtaining gender-affirming procedures without health insurance is more difficult; thus, the relation of an unmet need for gender-affirming procedures with employment discrimination is notable, which might be a structural barrier to health care access. Transgender women possibly have lower access to gender-affirming procedures in part because of employers refusing to hire them, and therefore being uninsured or inadequately insured.

Limitations

General limitations for the NHBS-Trans are available in the overview and methodology report of this supplement (*17*). The findings in this report are subject to at least five additional limitations. First, because transgender women are hard to reach, the data might not be representative of all transgender women residing in the seven urban areas. Second, the data are self-reported and subject to recall and social desirability biases, which could underestimate results. Third, causality cannot be inferred because of the cross-sectional study design. For example, whether employment discrimination directly caused loss of health insurance or care outcomes is unknown. Fourth, whether participants are employed, how many jobs they hold, or sectors of employment where they faced discrimination is unknown. Nevertheless, transgender persons are twice as likely to be unemployed as cisgender persons (*42*). Finally, the discrimination questions were limited to transphobia and thus lack an intersectional framework. Transgender women could face discrimination because of race and ethnicity, age, weight, income, disability, and other characteristics that were not collected in the survey. Black transgender women experience unique marginalization differently from White transgender women or Black cisgender persons (*43*). This analysis indicated that Black transgender women reported less employment discrimination than White transgender women; however, this finding might be attributable to unmeasured intersectionality and not demonstrative of less discrimination. Previous studies have found that Black transgender women experience high employment discrimination (*43*,*44*); however, they are more likely to attribute discrimination to racism (*45*). Asking Black and Hispanic transgender women if they experienced discrimination solely because of being transgender likely explains some of the discrepancies between this study and other studies. Furthermore, Black and Hispanic transgender women often report mistrust in institutional systems and, therefore, might be reluctant to apply for jobs out of fear of anticipated discrimination (*8*), which could result in fewer discriminatory situations. Previous studies demonstrate that transgender persons sometimes strategically avoid certain jobs on the basis of perceptions of anticipated discrimination (*44*).

Conclusion

Transgender women face many types of discrimination, which contribute to their economic and social marginalization. A transgender person's ability to pursue their life goals and express their identity is compromised by lack of health insurance coverage for gender-affirming care (*33*), banning gender-affirming care for minors, and state bans that deny

access to gender-affirming bathrooms (*46*). To that end, the findings from this report might be useful to guide legal, health care, and employment efforts to address threats to transgender women's rights. Although discrimination on the basis of gender identity is illegal, employment discrimination toward transgender women still occurs; lawyers, legislators, and others can work to ensure those laws are enforced. Transgender women who have been discriminated against in the workplace can file lawsuits or complaints with the Equal Employment Opportunity Commission (*47*). Other legislative actions that have improved access to health insurance and health care include Medicaid expansion (*6*) and explicit Medicaid coverage of gender-affirming care (*48*). Employers across sectors can implement antidiscrimination trainings and policies that protect transgender women from hiring and workplace discrimination. Increased representation of transgender persons across workplace sectors might help avoid bias and build cultural competency. At an individual level, persons who are not transgender can help reduce workplace discrimination through self-education and providing social support to transgender colleagues. This analysis, which examined how employment discrimination is associated with lower health care access and use for transgender women, demonstrates the importance of transgender women working and living with dignity and without fear of unfair treatment.

National HIV Behavioral Surveillance Among Transgender Women Study Group

Narquis Barak, CrescentCare; Kathleen A. Brady, Philadelphia Department of Public Health; Sarah Braunstein, New York City Department of Health and Mental Hygiene; Jasmine Davis, CrescentCare; Sara Glick, University of Washington, School of Medicine, Division of Allergy and Infectious Diseases, Public Health – Seattle & King County, HIV/STD Program; Andrea Harrington, Philadelphia Department of Public Health; Jasmine Lopez, New York City Department of Health and Mental Hygiene; Yingbo Ma, Los Angeles County Department of Public Health; Aleks Martin, Public Health – Seattle & King County, HIV/STD Program; Genetha Mustaafaa, Georgia Department of Public Health; Tanner Nassau, Philadelphia Department of Public Health; Gia Olaes, Los Angeles County Department of Public Health; Jennifer Reuer, Washington State Department of Health; Alexis Rivera, New York City Department of Health and Mental Hygiene; William T. Robinson, Louisiana State University Health Science Center in New Orleans – School of Public Health, Louisiana Office of Public Health STD/HIV/Hepatitis Program; Ekow Kwa Sey, Los Angeles County Department of Public Health; Sofia Sicro, San Francisco Department of Public Health; Brittany Taylor, Georgia Department of Public Health; Dillon Trujillo, San Francisco Department of Public Health; Erin Wilson, San Francisco Department of Public Health; Pascale Wortley, Georgia Department of Public Health.

Conflicts of Interest

All authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. No conflicts of interest were disclosed.

References

1. Casey LS, Reisner SL, Findling MG, et al. Discrimination in the United States: experiences of lesbian, gay, bisexual, transgender, and queer Americans. Health Serv Res 2019;54(Suppl 2):1454–66. PMID:31659745 https://doi.org/10.1111/1475-6773.13229
2. US Equal Employment Opportunity Commission. Protections against employment discrimination based on sexual orientation or gender identity. Washington, DC; US Equal Employment Opportunity Commission. https://www.eeoc.gov/laws/guidance/protections-against-employment-discrimination-based-sexual-orientation-or-gender
3. James S, Herman J, Rankin S, Keisling M, Mottet L, Anafi M. The report of the 2015 U.S. Transgender Survey. Washington, DC: National Center for Transgender Equality; 2016. https://transequality.org/sites/default/files/docs/usts/USTS-Full-Report-Dec17.pdf
4. Martinez-Velez JJ, Melin K, Rodriguez-Diaz CE. A preliminary assessment of selected social determinants of health in a sample of transgender and gender nonconforming individuals in Puerto Rico. Transgend Health 2019;4:9–17. PMID:30719502 https://doi.org/10.1089/trgh.2018.0045
5. Glick JL, Lopez A, Pollock M, Theall KP. Housing insecurity and intersecting social determinants of health among transgender people in the USA: a targeted ethnography. Int J Transgender Health 2020;21:337–49. PMID:34993513 https://doi.org/10.1080/26895269.2020.1780661
6. Tran NK, Baker KE, Lett E, Scheim AI. State-level heterogeneity in associations between structural stigma and individual health care access: a multilevel analysis of transgender adults in the United States. J Health Serv Res Policy 2023;28:109–18. PMID:36040166 https://doi.org/10.1177/13558196221123413
7. Du Bois SN, Yoder W, Guy AA, Manser K, Ramos S. Examining associations between state-level transgender policies and transgender health. Transgend Health 2018;3:220–4. PMID:30596149 https://doi.org/10.1089/trgh.2018.0031
8. Smart BD, Mann-Jackson L, Alonzo J, et al. Transgender women of color in the U.S. South: a qualitative study of social determinants of health and healthcare perspectives. Int J Transgender Health 2020;23:164–77. PMID:35403118 https://doi.org/10.1080/26895269.2020.1848691
9. Lett E, Abrams MP, Gold A, Fullerton FA, Everhart A. Ethnoracial inequities in access to gender-affirming mental health care and psychological distress among transgender adults. Soc Psychiatry Psychiatr Epidemiol 2022;57:963–71. PMID:35137246 https://doi.org/10.1007/s00127-022-02246-6
10. Baker KE, Wilson LM, Sharma R, Dukhanin V, McArthur K, Robinson KA. Hormone therapy, mental health, and quality of life among transgender people: a systematic review. J Endocr Soc 2021;5:bvab011. PMID:33644622 https://doi.org/10.1210/jendso/bvab011
11. Cohen WA, Sangalang AM, Dalena MM, Ayyala HS, Keith JD. Navigating insurance policies in the United States for gender-affirming surgery. Plast Reconstr Surg Glob Open 2019;7:e2564. PMID:32537307 https://doi.org/10.1097/GOX.0000000000002564
12. Van Gerwen OT, Blumenthal JS. Providing gender-affirming care to transgender and gender-diverse individuals with and at risk for HIV. Top Antivir Med 2023;31:3–13. PMID:37018731
13. Glick JL, Theall KP, Andrinopoulos KM, Kendall C. The role of discrimination in care postponement among trans-feminine individuals in the U.S. National Transgender Discrimination Survey. LGBT Health 2018;5:171–9. PMID:29589995 https://doi.org/10.1089/lgbt.2017.0093
14. Jaffee KD, Shires DA, Stroumsa D. Discrimination and delayed health care among transgender women and men: implications for improving medical education and health care delivery. Med Care 2016;54:1010–6. PMID:27314263 https://doi.org/10.1097/MLR.0000000000000583

15. Lelutiu-Weinberger C, English D, Sandanapitchai P. The roles of gender affirmation and discrimination in the resilience of transgender individuals in the US. Behav Med 2020;46:175–88. PMID:32787726 https://doi.org/10.1080/08964289.2020.1725414
16. CDC. HIV infection, risk, prevention, and testing behaviors among transgender women—National HIV Behavioral Surveillance, 7 U.S. cities, 2019–20. Atlanta, GA: US Department of Health and Human Services, CDC; 2021. https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-special-report-number-27.pdf
17. Kanny D, Lee K, Olansky E, et al.; National HIV Behavioral Surveillance Among Transgender Women Study Group. Overview and methodology of the National HIV Behavioral Surveillance Among Transgender Women—seven urban areas, United States, 2019–2020. In: National HIV Behavioral Surveillance Among Transgender Women—seven urban areas, United States, 2019–2020. MMWR Suppl 2024;73(No. Suppl-1):1–8.
18. Mallory C, Tentindo W. Medicaid coverage for gender-affirming care. Los Angeles, CA: Williams Institute; 2019. https://williamsinstitute.law.ucla.edu/wp-content/uploads/Medicaid-Gender-Care-Oct-2019.pdf
19. Stafford JE, Cocanougher BA. Reference group theory [Chapter 16]. In: Selected aspects of consumer behavior. Alexandria, VA: National Science Foundation; 1977:361–80.
20. Gonzalez KA, Ramirez JL, Galupo MP. Increase in GLBTQ minority stress following the 2016 US presidential election. J GLBT Fam Stud 2018;14:130–51. https://doi.org/10.1080/1550428X.2017.1420849
21. Kattari SK, Walls NE, Speer SR. Differences in experiences of discrimination in accessing social services among transgender/gender nonconforming individuals by (dis)ability. J Soc Work Disabil Rehabil 2017;16:116–40. PMID:28447917 https://doi.org/10.1080/1536710X.2017.1299661
22. Spencer CS, Gaskin DJ, Roberts ET. The quality of care delivered to patients within the same hospital varies by insurance type. Health Aff (Millwood) 2013;32:1731–9. PMID:24101062 https://doi.org/10.1377/hlthaff.2012.1400
23. Christian R, Mellies AA, Bui AG, Lee R, Kattari L, Gray C. Measuring the health of an invisible population: lessons from the Colorado Transgender Health Survey. J Gen Intern Med 2018;33:1654–60. PMID:29761263 https://doi.org/10.1007/s11606-018-4450-6
24. Lee K, Trujillo L, Olansky E, et al.; National HIV Behavioral Surveillance among Transgender Women Study Group. Factors associated with use of HIV prevention and health care among transgender women—seven urban areas, 2019–2020. MMWR Morb Mortal Wkly Rep 2022;71:673–9. PMID:35588092 https://doi.org/10.15585/mmwr.mm7120a1
25. Morris E, Teplinskaya A, Olansky E, Kemp Rinderle J, Chapin Bardales J; National HIV Behavioral Surveillance Study Group. Characteristics associated with pre-exposure prophylaxis discussion and use among transgender women without HIV infection—National HIV Behavioral Surveillance Among Transgender Women, seven urban areas, United States, 2019–2020. In: National HIV Behavioral Surveillance Among Transgender Women—seven urban areas, United States, 2019–2020. MMWR Suppl 2024;73(No. Suppl-1):9–20.
26. Rivera AV, Lopez JM, Braunstein SL. Exploring the association between gender affirmation and PrEP use among transgender women in New York City. AIDS Behav 2023;27:1523–30. PMID:36574185 https://doi.org/10.1007/s10461-022-03944-7
27. Ding JM, Ehrenfeld JM, Edmiston EK, Eckstrand K, Beach LB. A model for improving health care quality for transgender and gender nonconforming patients. Jt Comm J Qual Patient Saf 2020;46:37–43. PMID:31708472 https://doi.org/10.1016/j.jcjq.2019.09.005
28. Kaiser Family Foundation. Medicaid and HIV. San Francisco, CA: Kaiser Family Foundation; 2019. https://www.kff.org/hivaids/issue-brief/medicaid-and-people-with-hiv/
29. Peterman DE. Socioeconomic status discrimination. Va Law Rev 2018;104:1283–357. https://virginialawreview.org/wp-content/uploads/2020/12/Evans_Online%20Revised.pdf
30. Maulsby CH, Ratnayake A, Hesson D, Mugavero MJ, Latkin CA. A scoping review of employment and HIV. AIDS Behav 2020;24:2942–55. PMID:32246357 https://doi.org/10.1007/s10461-020-02845-x
31. Benitez J, Perez V, Seiber E. Medicaid access during economic distress: lessons learned from the Great Recession. Med Care Res Rev 2021;78:490–501. PMID:32129138 https://doi.org/10.1177/1077558720909237
32. Singer S, Yeung H, Mostaghimi A. State Medicaid coverage of dermatologic procedures and other gender-affirming services for transgender patients in the United States. LGBT Health 2020;7:166–8. PMID:32096701 https://doi.org/10.1089/lgbt.2019.0161
33. Gomez I, Ranji U, Salganicoff A, et al. Update on Medicaid coverage of gender-affirming health services. San Francisco, CA: Kaiser Family Foundation; 2022. https://www.kff.org/womens-health-policy/issue-brief/update-on-medicaid-coverage-of-gender-affirming-health-services
34. Lewis DC, Flores AR, Haider-Markel DP, Miller PR, Tadlock BL, Taylor JK. Degrees of acceptance: variation in public attitudes toward segments of the LGBT community. Polit Res Q 2017;70:861–75. https://doi.org/10.1177/1065912917717352
35. Baker AM, Hunt LM. Counterproductive consequences of a conservative ideology: Medicaid expansion and personal responsibility requirements. Am J Public Health 2016;106:1181–7. PMID:27196640 https://doi.org/10.2105/AJPH.2016.303192
36. Yearby R, Clark B, Figueroa JF. Structural racism in historical and modern US health care policy. Health Aff (Millwood) 2022;41:187–94. PMID:35130059 https://doi.org/10.1377/hlthaff.2021.01466
37. Sevelius JM, Keatley J, Calma N, Arnold E. 'I am not a man': trans-specific barriers and facilitators to PrEP acceptability among transgender women. Glob Public Health 2016;11:1060–75. PMID:26963756 https://doi.org/10.1080/17441692.2016.1154085
38. Sevelius JM, Saberi P, Johnson MO. Correlates of antiretroviral adherence and viral load among transgender women living with HIV. AIDS Care 2014;26:976–82. PMID:24646419 https://doi.org/10.1080/09540121.2014.896451
39. Olansky E, Lee K, Handanagic S, Trujillo L; National HIV Behavioral Surveillance Among Transgender Women Study Group. Nonprescription hormone use among transgender women—National HIV Behavioral Surveillance Among Transgender Women—seven urban areas, United States, 2019–2020. In: National HIV Behavioral Surveillance Among Transgender Women—seven urban areas, United States, 2019–2020. MMWR Suppl 2024;73(No. Suppl-1):34–9.
40. Stroumsa D, Crissman HP, Dalton VK, Kolenic G, Richardson CR. Insurance coverage and use of hormones among transgender respondents to a national survey. Ann Fam Med 2020;18:528–34. PMID:33168681 https://doi.org/10.1370/afm.2586
41. Restar A, Dusic EJ, Garrison-Desany H, et al. Gender affirming hormone therapy dosing behaviors among transgender and nonbinary adults. Humanit Soc Sci Commun 2022;9:1–11. PMID:36636110 https://doi.org/10.1057/s41599-022-01291-5
42. Baboolall D, Greenberg S, Obeid M, Zucker J. Being transgender at work. Atlanta, GA: McKinsey & Company; 2021. https://www.mckinsey.com/featured-insights/diversity-and-inclusion/being-transgender-at-work

43. Nourafshan A. The new employment discrimination: intra-LGBT intersectional invisibility and the marginalization of minority subclasses in antidiscrimination law. Duke J Gend Law Policy 2017;24:107–41. https://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=1316&context=djglp
44. Kattari SK, Whitfield DL, Walls NE, Langenderfer-Magruder L, Ramos D. Policing gender through housing and employment discrimination: comparison of discrimination experiences of transgender and cisgender LGBQ individuals. J Soc Social Work Res 2016;7:427–47. https://doi.org/10.1086/686920
45. Center for Black Equity. Black LGBTQ Community Survey, 2020–2021. Corte Madera, CA: Community Marketing & Insights; 2021. https://www.cmi.info/documents/temp/LGBTQ_Black-LGBTQ-Community-Survey_2020-2021.pdf
46. Barbee H, Deal C, Gonzales G. Anti-transgender legislation—a public health concern for transgender youth. JAMA Pediatr 2022;176:125–6. PMID:34747979 https://doi.org/10.1001/jamapediatrics.2021.4483
47. National Center for Transgender Equality. Know your rights: employment (general). Washington, DC: National Center for Transgender Equality; 2023. https://transequality.org/know-your-rights/employment-general
48. Padula WV, Baker K. Coverage for gender-affirming care: making health insurance work for transgender Americans. LGBT Health 2017;4:244–7. PMID:28708447 https://doi.org/10.1089/lgbt.2016.0099

Social Support and the Association Between Certain Forms of Violence and Harassment and Suicidal Ideation Among Transgender Women — National HIV Behavioral Surveillance Among Transgender Women, Seven Urban Areas, United States, 2019–2020

Patrick C. Eustaquio, MD[1,2]; Evelyn Olansky, MPH[1]; Kathryn Lee, MPH[1]; Ruthanne Marcus, PhD[1]; Susan Cha, PhD[1]; National HIV Behavioral Surveillance Among Transgender Women Study Group

[1]*Division of HIV Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, CDC, Atlanta, Georgia;* [2]*Oak Ridge Institute for Science and Education, Oak Ridge, Tennessee*

Abstract

Violence and harassment toward transgender women are associated with suicidal thoughts and behaviors, and social support might moderate such association. This analysis explored the association between certain forms of violence and harassment and suicidal ideation and moderation by social support. Better understanding of these associations could guide mental health services and structural interventions appropriate to lived experiences of transgender women. This cross-sectional analysis used data from CDC's National HIV Behavioral Surveillance Among Transgender Women. During 2019–2020, transgender women were recruited via respondent-driven sampling from seven urban areas in the United States for an HIV biobehavioral survey. The association between experiencing certain forms of violence and harassment (i.e., gender-based verbal and physical abuse or harassment, physical intimate partner abuse or harassment, and sexual violence) and suicidal ideation was measured using adjusted prevalence ratios and 95% CIs generated from log-linked Poisson regression models controlling for respondent-driven sampling design and confounders. To examine moderation, the extents of social support from family, friends, and significant others were assessed for interaction with certain forms of violence and harassment; if p interaction was <0.05, stratified adjusted prevalence ratios were presented. Among 1,608 transgender women, 59.7% experienced certain forms of violence and harassment and 17.7% reported suicidal ideation during the past 12 months; 75.2% reported high social support from significant others, 69.4% from friends, and 46.8% from family. Experiencing certain forms of violence and harassment and having low-moderate social support from any source was associated with higher prevalence of suicidal ideation. Social support from family moderated the association between experiencing certain forms of violence and harassment and suicidal ideation (p interaction = 0.01); however, even in the presence of high family social support, experiencing certain forms of violence and harassment was associated with higher prevalence of suicidal ideation. Social support did not completely moderate the positive association between experiencing violence and harassment and suicidal ideation. Further understanding of the social support dynamics of transgender women might improve the quality and use of social support. Policymakers and health care workers should work closely with transgender women communities to reduce the prevalence of violence, harassment, and suicide by implementing integrated, holistic, and transinclusive approaches.

Introduction

A high proportion of transgender persons considered or attempted suicide at some point during their lives, often higher than in the general population (*1*), with notably higher prevalence among young transgender persons and transgender persons from racial and ethnic minority groups (*2*–*5*). In the 2015 U.S. Transgender Survey, 82% of respondents ever considered and 40% ever attempted suicide; 48% of respondents considered and 7% attempted suicide during the past year (*2*). Further, transgender women are more likely to report suicidal thoughts than transgender men, nonbinary persons, and other gender diverse groups (*6*). On the basis of CDC's National HIV Behavioral Surveillance Among Transgender Women (NHBS-Trans) during 2019–2020, a total of 18% considered and 4% attempted suicide during the past 12 months (*7*).

Similarly prevalent among transgender persons are experiences of violence and harassment. Studies reported a wide range in lifetime violence among transgender persons (7%–89%), which limits understanding of the true prevalence in this population (*8*). Violence and harassment against transgender persons come in many forms (e.g., verbal, physical, sexual, occupational, economic, and emotional) and from

Corresponding author: Patrick C. Eustaquio, Division of HIV Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, CDC. Telephone: 404-718-3151; Email: peustaquio@cdc.gov.

many sources (e.g., interpersonal, partner or nonpartner, and structural) (*8*). Particularly, transgender women are more frequently victimized than other transgender and gender diverse groups (*9*); such is often attributed to transmisogyny, an intersection stigma based on trans identity and feminine expression (*10*). Violence and harassment have been associated with higher risk for HIV infection (*11*), mental health conditions (*5,12*), and death, often from suicide (*13–15*). The association between violence and harassment and increased suicidal thoughts and behaviors among transgender persons is consistent across studies (*3,13,14,16,17*). Social support might attenuate the association, although studies exploring such a hypothesis among transgender persons are scant and violence and harassment were not analyzed separately from other adverse social experiences (*15,18–20*).

Scientific gaps remain because most previous studies were not focused on transgender women and have examined violence and harassment, suicidal ideation, and social support separately. This analyses in this report examined the association between experiences of certain forms of violence and harassment and suicidal ideation among transgender women and explored the moderation of the association by perceived social support. A thorough understanding of the intersectionality of these factors could help guide recommendations for mental health services and structural interventions tailored to lived experiences of transgender women.

Methods

Data Source

This report includes survey data from NHBS-Trans conducted by CDC during June 2019–February 2020 to assess behavioral risks, prevention usage, and HIV prevalence. Eligible participants completed an interviewer-administered questionnaire and were offered HIV testing. Information and referrals to appropriate services, which were identified as available and acceptable to the population during formative assessment, were provided to participants who reported experiences of violence and harassment and suicidal thoughts and behaviors. Additional information about NHBS-Trans eligibility criteria, data collection, and biologic testing is available in the overview and methodology report of this supplement (*21*). The NHBS-Trans protocol questionnaire and documentation are available at https://www.cdc.gov/hiv/statistics/systems/nhbs/methods-questionnaires.html#trans.

Applicable local institutional review boards in each participating project area approved NHBS-Trans activities. The final NHBS-Trans sample included 1,608 transgender women in seven urban areas in the United States (Atlanta, Georgia; Los Angeles, California; New Orleans, Louisiana; New York City, New York; Philadelphia, Pennsylvania; San Francisco, California; and Seattle, Washington) recruited using respondent-driven sampling. This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable Federal law and CDC policy.*

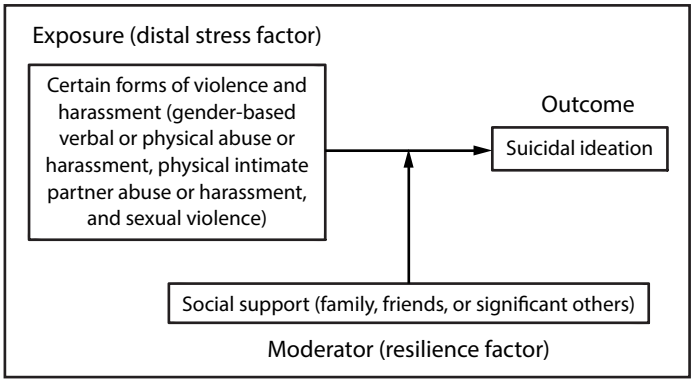
Measures

The gender minority stress model (*14*) underpinned the conceptual framework for the analysis (Figure). This model posits that being part of a gender minority contributes to multiple stressors, including violence and harassment, that negatively affect health outcomes, including suicidal ideation, among transgender women (*14*). Social support was analyzed as a resilience factor that could moderate the association between violence and suicidal ideation.

The outcome assessed was suicidal ideation during the past 12 months (Table 1). The exposure assessed was experiences with certain forms of violence and harassment, which was operationally defined as gender-based verbal or physical abuse or harassment, physical abuse or harassment by an intimate partner, or sexual violence during the past 12 months. The creation of this composite variable (*22*) was determined by the high co-occurrence of multiple forms of violence and harassment among transgender populations among different studies (*8*) and in the current analytical sample. The moderator assessed was perceived social support, measured using the Multidimensional Scale of Perceived Social Support, dichotomized as low-moderate (mean <3.57)

* 45 C.F.R. part 46.102(l)(2), 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.

FIGURE. Conceptual framework of analysis based on the gender minority stress model — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas, United States, 2019–2020



Source: Testa RJ, Michaels MS, Bliss W, Rogers ML, Balsam KF, Joiner T. Suicidal ideation in transgender people: gender minority stress and interpersonal theory factors. J Abnorm Psychol 2017;126:125–36.

TABLE 1. Variables, questions, and analytic coding for social support and the association between certain forms of violence and harassment and suicidal ideation among transgender women — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,* United States, 2019–2020

Variable	Question	Analytic coding
Suicidal ideation	At any time in the past 12 months, did you seriously think about trying to kill yourself?	Yes or no
Certain forms of violence and harassment†	Any reports of gender-based verbal and physical abuse or harassment, physical intimate partner abuse or harassment, and sexual violence in the past 12 months.	Yes or no
Verbal abuse or harassment	In the past 12 months, have you been verbally abused or harassed because of your gender identity or presentation?	Yes or no
Physical abuse or harassment	In the past 12 months, have you been physically abused or harassed because of your gender identity or presentation?	Yes or no
Physical intimate partner abuse or harassment	In the past 12 months, have you been physically abused or harassed by a sexual partner?	Yes or no
Sexual violence	In the past 12 months, have you been forced to have sex when you did not want to? By forced, I mean physically forced or verbally threatened. By sex, I mean any sexual contact.	Yes or no
Social support from family	5-point Likert scale (from strongly agree to strongly disagree) • My family really tries to help me. Do you … • I get the emotional help and support I need from my family. Do you … • I can talk about my problems with my family. Do you … • My family is willing to help me make decisions. Do you …	Low-moderate (mean <3.57) or high (mean ≥3.57)
Social support from friends	5-point Likert scale (from strongly agree to strongly disagree) • My friends really try to help me. Do you … • I can count on my friends when things go wrong. Do you … • I have friends with whom I can share my joys and sorrows. Do you … • I can talk about my problems with my friends. Do you …	Low-moderate (mean <3.57) or high (mean ≥3.57)
Social support from significant others	5-point Likert scale (from strongly agree to strongly disagree) • There is a special person who is around when I am in need. Do you … • There is a special person with whom I can share joys and sorrows. Do you … • I have a special person who is a real source of comfort to me. Do you … • There is a special person in my life who cares about my feelings. Do you …	Low-moderate (mean <3.57) or high (mean ≥3.57)
Age	What is your date of birth?	18–24 yrs, 25–29 yrs, 30–39 yrs, 40–49 yrs, or >50 yrs
Race and ethnicity§	Do you consider yourself to be of Hispanic, Latino/a, or Spanish origin? Which racial group or groups do you consider yourself to be in? You may choose more than one option.	Black or African American, White, Hispanic, or other
Poverty¶	What was your household income last year from all sources before taxes? Including yourself, how many people depended on this income?	Above Federal poverty level or at or below Federal poverty level
Education	What is the highest level of education you completed?	<High school, high school diploma or equivalent, or >high school
GAHT status	Have you ever taken hormones for gender transition or affirmation? Are you currently taking hormones for gender transition or affirmation? Would you like to take hormones for gender transition or affirmation?	Do not want to take GAHT, currently taking GAHT, or want to take GAHT
Gender-affirming surgery status	Have you ever had any type of surgery for gender transition or affirmation? Do you plan or want to get additional surgeries for gender transition or affirmation? Do you want to have surgery for gender transition or affirmation?	No unmet gender-affirming surgery need, had procedures, or wants gender-affirming surgery but has not received procedures
Disability**	Are you deaf or do you have serious difficulty hearing? Are you blind or do you have serious difficulty seeing, even when wearing glasses? Because of a physical, mental, or emotional condition, do you have serious difficulty concentrating, remembering, or making decisions? Do you have serious difficulty walking or climbing stairs? Do you have difficulty dressing or bathing? Because of a physical, mental, or emotional condition, do you have difficulty doing errands alone, such as visiting a doctor's office or shopping?	Yes or no
Illicit drug use (excluding marijuana)	Have you ever in your life shot up or injected any drugs other than those prescribed for you? How many days or months or years ago did you last inject? In the past 12 months, have you used any drugs that were not prescribed for you and that you did not inject?	Yes or no

See table footnotes on the next page.

TABLE 1. (*Continued*) Variables, questions, and analytic coding for social support and the association between certain forms of violence and harassment and suicidal ideation among transgender women — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,* United States, 2019–2020

Variable	Question	Analytic coding
Incarceration	Have you ever been held in a detention center, jail, or prison for more than 24 hours? During the past 12 months, have you been held in a detention center, jail, or prison for more than 24 hours?	Never incarcerated, incarcerated in the past 12 months, or incarcerated >12 months ago
Homelessness	In the past 12 months, have you been homeless at any time? By homeless, I mean you were living on the street, in a shelter, in a single room occupancy hotel (SRO), or in a car. Are you currently homeless?	Currently homeless, was homeless in the past 12 months but not currently, or no homelessness in the past 12 months

Abbreviation: GAHT = gender-affirming hormonal therapy.
* Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.
† Not a questionnaire item in National HIV Behavioral Surveillance Among Transgender Women. This is a composite analysis variable from the responses in actual survey questions on verbal abuse or harassment, physical abuse or harassment, physical intimate partner abuse or harassment, and sexual violence.
§ Persons of Hispanic or Latina (Hispanic) origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.
¶ 2019 Federal poverty level thresholds were calculated on the basis of U.S. Department of Health and Human Services Federal poverty level guidelines (https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/prior-hhs-poverty-guidelines-federal-register-references/2019-poverty-guidelines).
** To assess difficulty in six basic domains of functioning (hearing, vision, cognition, walking, self-care, and independent living), based on U.S. Department of Health and Human Services disability data standard (https://aspe.hhs.gov/reports/hhs-implementation-guidance-data-collection-standards-race-ethnicity-sex-primary-language-disability-0).

and high (mean ≥3.57) (Cronbach's alpha = 0.97) (*23*). All three social support subscales (family, friends, and significant others) were assessed separately. The instrument demonstrated good construct validity and internal consistency among transgender persons (*15*). Confounding factors, determined a priori (*15,16,24*), included age, race and ethnicity, poverty, education, HIV testing result, hormonal and surgical gender-affirmation status, illicit drug use, disability, incarceration, and homelessness.

Analysis

The association between certain forms of violence and harassment and suicidal ideation was examined using log-linked Poisson regression models with generalized estimating equations with an exchangeable correlation matrix, with robust variance estimators. Bivariable models were used to determine factors associated with suicidal ideation, and the associations were described as crude prevalence ratios with 95% CIs. Multivariable models, controlled for confounding factors, were used to examine the association of certain forms of violence and harassment and social support with suicidal ideation, and the associations were described as adjusted prevalence ratios with 95% CIs. All bivariable and multivariable models accounted for the respondent-driven sampling methodology by adjusting for network size and city and by clustering on recruitment chains. Moderation by social support subscales were assessed using interaction terms of dichotomized social support subscale scores and certain forms of violence and harassment in multiplicative scale in separate multivariable models (*25*). The interaction between family social support and certain forms of violence and harassment was statistically significant ($p<0.05$); hence, stratified adjusted prevalence ratios by extent of family social support were calculated (*25*). Statistical analyses were conducted using SAS (version 9.4; SAS Institute).

Results

Among transgender women in the sample (N = 1,608), many were aged <40 years (59.5%), were Hispanic or Latina (Hispanic) (40.0%) or Black or African American (Black) (35.4%), lived at or below the Federal poverty level (62.7%), were ever incarcerated (58.1%; 17.2% during the past 12 months), and had experienced homelessness during the past 12 months (41.6%) (Table 2). (Persons of Hispanic origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.) Most were currently taking gender-affirming hormonal therapy (71.5%) and wanted gender-affirming surgery but had not received procedures (52.2%); 41.0% tested positive for HIV. During the past 12 months, 59.7% experienced certain forms of violence and harassment: 53.4% reported gender-based verbal abuse or harassment, 26.6% reported gender-based physical abuse or harassment, 15.3% reported being physically abused or harassed by an intimate partner, and 14.8% reported sexual violence (not mutually exclusive). Among all participants, 75.2% reported high social support from significant others, 69.4% from friends, and 46.8% from family.

TABLE 2. Number and percentage of transgender women experiencing certain forms violence and harassment, by reported suicidal ideation and selected characteristics — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,* United States, 2019–2020

Characteristic	Total (N = 1,608)	Reported suicidal ideation during the past year			
		Yes	No	Crude PR (95% CI)§	Adjusted PR (95% CI)§
	No.† (%)	No. (%)	No. (%)		
Overall	**1,608 (100)**	**284 (17.7)**	**1,318 (82.3)**	**NA**	**NA**
Age group, yrs					
18–24	**190 (11.8)**	50 (26.3)	138 (72.6)	1.00 (Ref)	NA
25–29	**306 (19.0)**	69 (22.5)	235 (76.8)	0.85 (0.62–1.17)	NA
30–39	**462 (28.7)**	85 (18.4)	376 (81.4)	0.71 (0.55–0.93)¶	NA
40–49	**307 (19.1)**	44 (14.3)	263 (85.7)	0.56 (0.38–0.81)¶	NA
≥50	**343 (21.3)**	36 (10.5)	306 (89.2)	0.41 (0.27–0.6)¶	NA
Race and ethnicity**					
Black or African American	**569 (35.4)**	74 (13.0)	492 (86.5)	0.31 (0.25–0.38)¶	NA
White	**180 (11.2)**	74 (41.1)	105 (58.3)	1.00 (Ref)	NA
Other	**213 (13.2)**	30 (14.1)	181 (85.0)	0.36 (0.23–0.56)¶	NA
Hispanic or Latina	**643 (40.0)**	106 (16.5)	537 (83.5)	0.39 (0.32–0.48)¶	NA
Poverty††					
Above the Federal poverty level	**585 (36.4)**	104 (17.8)	479 (81.9)	1.00 (Ref)	NA
At or below the Federal poverty level	**1,008 (62.7)**	175 (17.4)	830 (82.3)	0.93 (0.76–1.13)	NA
Education					
<High school	**347 (21.6)**	44 (12.7)	303 (87.3)	1.00 (Ref)	NA
High school diploma or equivalent	**596 (37.1)**	110 (18.5)	484 (81.2)	1.46 (1.03–2.07)¶	NA
>High school	**521 (32.4)**	106 (20.3)	412 (79.1)	1.63 (1.23–2.17)¶	NA
GAHT status					
Do not want to take GAHT	**121 (7.5)**	12 (9.9)	109 (90.1)	1.00 (Ref)	NA
Currently taking GAHT	**1,149 (71.5)**	200 (17.4)	944 (82.2)	1.91 (0.87–4.22)	NA
Want to take GAHT	**317 (19.7)**	68 (21.5)	248 (78.2)	2.26 (0.99–5.14)	NA
Gender-affirming surgery status					
No unmet need	**448 (27.9)**	59 (13.2)	388 (86.6)	1.00 (Ref)	NA
Had procedures, wants more procedures	**232 (14.4)**	34 (14.7)	197 (84.9)	1.18 (0.85–1.63)	NA
Wants but has not received procedures	**840 (52.2)**	173 (20.6)	663 (78.9)	1.53 (1.12–2.09)¶	NA
Confirmed HIV status§§					
Negative	**902 (56.1)**	198 (22.0)	699 (77.5)	1.00 (Ref)	NA
Positive	**659 (41.0)**	82 (12.4)	576 (87.4)	0.57 (0.44–0.73)¶	NA
Disability¶¶					
No	**747 (46.5)**	79 (10.6)	667 (89.3)	1.00 (Ref)	NA
Yes	**853 (53.0)**	202 (23.7)	646 (75.7)	2.27 (1.76–2.93)¶	NA
Illicit drug use***					
No	**947 (58.9)**	135 (14.3)	811 (85.6)	1.00 (Ref)	NA
Yes	**657 (40.9)**	148 (22.5)	504 (76.7)	1.58 (1.29–1.95)¶	NA
Incarceration†††					
Never incarcerated	**670 (41.7)**	132 (19.7)	534 (79.7)	1.00 (Ref)	NA
Incarcerated >12 months ago	**658 (40.9)**	100 (15.2)	557 (84.7)	0.77 (0.63–0.95)¶	NA
Incarcerated ≤12 months ago	**277 (17.2)**	50 (18.1)	226 (81.6)	0.86 (0.66–1.12)	NA
Homelessness					
No homelessness during past 12 months	**936 (58.2)**	131 (14.0)	804 (85.9)	1.00 (Ref)	NA
Was homeless during past 12 months but not currently	**306 (19.0)**	58 (19.0)	247 (80.7)	1.35 (0.97–1.89)	NA
Currently homeless	**364 (22.6)**	94 (25.8)	266 (73.1)	1.80 (1.47–2.2)¶	NA
Certain forms of violence and harassment§§§					
Did not experience	**646 (40.2)**	61 (9.4)	584 (90.4)	1.00 (Ref)	1.00 (Ref)
Experienced	**960 (59.7)**	221 (23.0)	734 (76.5)	2.34 (1.64–3.35)¶	1.61 (1.21–2.15)¶
Family social support					
High	**752 (46.8)**	82 (10.9)	670 (89.1)	1.00 (Ref)	1.00 (Ref)
Low-moderate	853 (53.0)	201 (23.6)	646 (75.7)	2.17 (1.68–2.81)¶	1.62 (1.27–2.06)¶

See table footnotes on the next page.

TABLE 2. (*Continued*) Number and percentage of transgender women experiencing certain forms violence and harassment, by reported suicidal ideation and selected characteristics — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,* United States, 2019–2020

Characteristic	Total (N = 1,608) No.† (%)	Reported suicidal ideation during the past year: Yes No. (%)	No No. (%)	Crude PR (95% CI)§	Adjusted PR (95% CI)§
Friend social support					
High	**1,116 (69.4)**	186 (16.7)	926 (83.0)	1.00 (Ref)	1.00 (Ref)
Low-moderate	**491 (30.5)**	98 (20.0)	391 (79.6)	1.19 (1.01–1.39)¶	1.20 (1.01–1.43)¶
Significant other social support					
High	**1,209 (75.2)**	191 (15.8)	1,015 (84.0)	1.00 (Ref)	1.00 (Ref)
Low-moderate	**399 (24.8)**	93 (23.3)	303 (75.9)	1.44 (1.19–1.75)¶	1.20 (1.03–1.42)¶

Abbreviations: GAHT = gender-affirming hormonal therapy; NA = not applicable; PR = prevalence ratio; Ref = referent group.

* Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.

† Numbers might not sum to 1,608, and column percentages might not sum to 100% because of missing values.

§ All bivariable and multivariable models were controlled for city and network size and accounted for clustering by respondent-driven sampling recruitment chain. The multivariable models for the exposure and each moderator variables all had separate models and were adjusted for age, race and ethnicity, education, poverty, GAHT status, gender-affirming surgery status, disability, HIV status, incarceration, illicit drug use (excluding marijuana), and homelessness.

¶ Statistically significant at p<0.05.

** Persons of Hispanic or Latina (Hispanic) origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic. "Other" includes persons who identified with non-Hispanic ethnicity and identified as American Indian/Alaska Native, Native Hawaiian or other Pacific Islander, Asian, or multiracial (i.e., more than one racial group).

†† 2019 Federal poverty level thresholds were calculated on the basis of U.S. Department of Health and Human Services Federal poverty level guidelines (https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/prior-hhs-poverty-guidelines-federal-register-references/2019-poverty-guidelines).

§§ Participants with reactive rapid National HIV Behavioral Surveillance HIV test result supported by a second rapid test or supplemental laboratory-based testing.

¶¶ Serious difficulty hearing, seeing, doing cognitive tasks, walking or climbing stairs, dressing or bathing, or doing errands alone, based on U.S. Department of Health and Human Services disability data standard (https://aspe.hhs.gov/reports/hhs-implementation-guidance-data-collection-standards-race-ethnicity-sex-primary-language-disability-0).

*** Excludes marijuana.

††† Held in a detention center, jail, or prison for >24 hours.

§§§ Any reports of gender-based verbal and physical abuse or harassment, physical intimate partner abuse or harassment, and sexual violence during the past 12 months.

During the past 12 months, 17.7% reported suicidal ideation. The prevalence of suicidal ideation was higher among those who were aged 18–24 years, White, had at least a high school education, had an unmet need for gender-affirming surgery, had HIV-negative test results, reported drug use, have a disability, were currently experiencing homelessness, did not report a history of incarceration, reported low-moderate social support from any source, and experienced certain forms of violence and harassment (p<0.05) (Table 2). In the multivariable analyses, both experiencing certain forms of violence and harassment and having low-moderate social support from any source were associated with higher prevalence of suicidal ideation.

The interaction between social support from family and experiencing certain forms of violence and harassment was significant (p interaction = 0.01) (Table 3). However, even among those with high family social support, certain forms of violence and harassment were significantly associated with increased prevalence of suicidal ideation. The interactions between social support from friends and from significant others and experiencing certain forms of violence and harassment were not statistically significant.

Discussion

Six in 10 transgender women experienced certain forms of violence and harassment during the past 12 months, and approximately one fifth reported suicidal ideation during the past 12 months. Most transgender women reported high social support from friends or significant others. Experiencing certain forms of violence and harassment and having low-moderate social support were associated with increased prevalence of suicidal ideation. Even in the presence of high family social support, certain forms of violence and harassment were still associated with higher prevalence of suicidal ideation.

The prevalence of suicidal ideation during the past 12 months in this analysis was lower than other studies among nonrandom samples of transgender persons (*2,16*) and young transgender women (*5*) but was disproportionately higher than a randomly selected sample of the general population in the United States (*1*). Contrary to other studies (*2,4,13,16,24,26*), suicidal ideation was not associated with gender-affirming therapy or poverty. Suicidal ideation was highest among those currently experiencing homelessness, consistent with other studies (*16,27*). The lower prevalence of suicidal ideation among those with history of incarceration >12 months ago was consistent with another study (*28*).

TABLE 3. Association between suicidal ideation and experiences of certain forms of violence and harassment* and the moderating effect of family social support — National HIV Behavioral Surveillance Among Transgender Women, seven urban areas,† United States, 2019–2020

	Did not experience certain forms of violence and harassment			Experienced certain forms of violence and harassment			Experiences of certain forms of violence and harassment within the strata of social support
Family social support	No. with SI§,¶,**	No. without SI§,¶,**	aPR (95% CI)**,††	No. with SI§,¶,**	No. without SI§,¶,**	aPR (95% CI)**,††	aPR (95% CI)**,††
High	18	371	1.00 (Ref)	63	299	2.60 (1.63–4.16)	2.60 (1.63–4.16)
Low-moderate	43	211	2.83 (1.73–4.63)	157	435	3.24 (2.00–5.24)	1.15 (0.81–1.61)

Abbreviations: aPR = adjusted prevalence ratio; SI = suicidal ideation.

* Any reports of gender-based verbal and physical abuse or harassment, physical intimate partner abuse or harassment, and sexual violence during the past 12 months

† Atlanta, GA; Los Angeles, CA; New Orleans, LA; New York City, NY; Philadelphia, PA; San Francisco, CA; and Seattle, WA.

§ N = 1,608.

¶ Numbers might not sum to 1,608 because of missing values.

** Log-linked Poisson regression models using generalized estimating equation with an exchangeable correlation matrix and robust variance estimators with a significant interaction term between family social support and certain forms of violence and harassment (p interaction = 0.01)

†† Models were adjusted for respondent-driven sampling design and confounding factors, including age, race and ethnicity, education, poverty, gender affirming hormonal therapy status, gender affirming surgery status, disability, HIV status, incarceration, illicit drug use (excluding marijuana), and homelessness.

The prevalence of certain forms of violence and harassment during the past 12 months in this analysis was similarly high as the estimates among transgender persons in a large cross-sectional study in the United States (*2*) and in a systematic review (*8*). The prevalence of physical intimate partner abuse or harassment and sexual violence during the past 12 months in this analysis were higher than that among cisgender women in the United States (*29*), but comparable to the intimate partner violence prevalence among cisgender women of low socioeconomic status (*30*).

The analysis contributes to existing research linking certain forms of violence and harassment with increased suicidal ideation among transgender women (*13,16,17*), and these studies likewise used the gender minority stress model (*14*) to explain the findings. This model suggests that certain forms of violence and harassment are often enacted upon those nonconforming to heterosexual and cisgender norms and are underpinned by sociocultural, political, and legal marginalization of gender minorities (*2,8*), emphasizing the role of social determinants influencing health disparities among transgender women (*8*).

The findings in this report indicate that lack of high social support was associated with suicidal ideation, a finding consistent with other studies (*15,18,26*). However, the association between certain forms of violence and harassment with higher suicidal ideation was not moderated by social support from friends and significant others, and the association remained despite having high social support from family. Collectively, these results suggest that the association of certain forms of violence and harassment with higher suicidal ideation remained regardless of social support from any source. Mediating factors between experiences of violence and harassment and suicidal ideation (e.g., incarceration, homelessness, and poor access to education and health care) might exist such that social support alone could not adequately reduce the risk for suicidal ideation (*18*). Previous moderation studies have demonstrated mixed results (*12,15,18,20,26*). Certain studies found that the association was not moderated by social support from family (*12,18,20*) and from friends (*15,20*). Other studies found that social support from significant others (*15*) and parental support specific to gender identity (*26*) buffered the increased suicidal ideation associated with violence and harassment. This report contributes to limited studies exploring the relation between these variables (*12,15,18,20,26*), but this report analyzed the nuanced variables altogether (*12,15,18,20,26*).

Social support dynamics of transgender women are multifaceted. Family could be a source of social support (*31*), abuse and harassment (*32*), or both. Amid the frequent reports of rejection from family, social support from friends and significant others might fill such gaps (*33*). Moreover, the findings suggest that the effectiveness of social support as a buffer might depend on the quality and the context in which the support was provided. Not all social support might be productively helpful (*34*), and certain transgender persons report adverse experiences while receiving social support, such as microaggressions (*33,35,36*) and corumination (*18,37*). Microaggressions are subtle behaviors of gender-based discrimination from various perpetrators (*33*); these might even come from supportive family, friends, significant others, and persons who belong to sexual and gender minority groups (*33,35,36*). Corumination is the unproductive processing and repeated experiencing of trauma with a person who shares lived experiences (*37*). Although both were associated with poor mental health outcomes (*33,36,38*), microaggressions and corumination do not discount the protective effects of social support in general on mental health (*15,16,23*). Nonetheless, further understanding of the social support dynamics among transgender persons, including improving how researchers operationalize and measure social support, is warranted (*19*).

Addressing violence, harassment, and suicidal ideation among transgender women requires integrated multisectoral interventions (https://www.cdc.gov/suicide/pdf/preventionresource.pdf). Violence and harassment prevention can be delivered through community-led awareness and cultural changes in existing programs (*39*), such as transinclusivity in schools (*39*), homeless shelters (*40*), the criminal justice system (*8*), and health care (*8*). Holistic approaches addressing underlying socioecological factors (e.g., gender norms, economic dependence, and public attitude toward violence and harassment) have been recommended (*41,42*). Moreover, because transgender persons experiencing violence and harassment were more likely to access support from family, friends, and significant others than from health care providers (*43*), interventions improving the quality of social support, such as family-based interventions (*44*), life-course appropriate tools (*31*), peer-delivered support groups (*19*), and bystander engagement (*43*), could be considered. Designing interventions with the transgender community is essential because transgender persons have values and strategies (*45*) on effectively building their social capital.

Limitations

General limitations for the NHBS-Trans are available in the overview and methodology report of this supplement (*21*). The findings in this report are subject to at least four additional limitations. First, the cross-sectional design precludes inferences on causality among violence and harassment, suicidal ideation, and social support. Second, measurement of variables might be limited by information bias. Measured violence and harassment excluded physical and verbal abuse or harassment that were not specific to their gender identity or presentation and other forms of violence (e.g., psychological and economic violence). Measured social support pertained to individual support to the participants and was not specific to structural or community levels of support. Family might pertain to family of origin or chosen family, or both; social support from significant others might be subject to nonspecificity and transientness of significant others. The survey did not assess whether sources of social support also were perpetrators of violence. Third, most data were self-reported and might be subject to recall and social desirability biases and influenced by trauma, which could underestimate the reports of suicidal thoughts and experiences of violence and harassment. Finally, the sample is not representative of transgender women residing outside of the seven urban areas. Because transgender women are hard to reach, the data might not be representative of all transgender women residing in the seven urban areas. The surveillance included an incentivized peer recruitment; therefore, participants might have been more likely to have similar characteristics, including socioeconomic status and experiences of violence (*22*).

Conclusion

Many transgender women experience certain forms of violence and harassment and these experiences are associated with suicidal ideation. Although social support might be protective against suicidal ideation, such support does not seem to completely buffer the association between certain forms violence and harassment and suicidal ideation. Integrated and holistic approaches to violence, harassment, and suicide prevention designed by and for transgender women are needed.

National HIV Behavioral Surveillance Among Transgender Women Study Group

Narquis Barak, CrescentCare; Kathleen A. Brady, Philadelphia Department of Public Health; Sarah Braunstein, New York City Department of Health and Mental Hygiene; Jasmine Davis, CrescentCare; Sara Glick, University of Washington, School of Medicine, Division of Allergy and Infectious Diseases, Public Health – Seattle & King County, HIV/STD Program; Andrea Harrington, Philadelphia Department of Public Health; Jasmine Lopez, New York City Department of Health and Mental Hygiene; Yingbo Ma, Los Angeles County Department of Public Health; Aleks Martin, Public Health – Seattle & King County, HIV/STD Program; Genetha Mustaafaa, Georgia Department of Public Health; Tanner Nassau, Philadelphia Department of Public Health; Gia Olaes, Los Angeles County Department of Public Health; Jennifer Reuer, Washington State Department of Health; Alexis Rivera, New York City Department of Health and Mental Hygiene; William T. Robinson, Louisiana State University Health Science Center in New Orleans – School of Public Health, Louisiana Office of Public Health STD/HIV/Hepatitis Program; Ekow Kwa Sey, Los Angeles County Department of Public Health; Sofia Sicro, San Francisco Department of Public Health; Brittany Taylor, Georgia Department of Public Health; Dillon Trujillo, San Francisco Department of Public Health; Erin Wilson, San Francisco Department of Public Health; Pascale Wortley, Georgia Department of Public Health.

Conflicts of Interest

All authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. No conflicts of interest were reported.

References

1. Substance Abuse and Mental Health Services Administration. Key substance use and mental health indicators in the United States: results from the 2020 National Survey on Drug Use and Health. Rockville, MD: US Department of Health and Human Services, Substance Abuse and Mental Health Services Administration; 2021. https://www.samhsa.gov/data/sites/default/files/reports/rpt29393/2019NSDUHFFRPDFWHTML/2019NSDUHFFR1PDFW090120.pdf
2. James SE, Herman JL, Rankin S, Keisling M, Mottet L, Anafi M. The report of the 2015 U.S. Transgender Survey. Washington, DC: National Center for Transgender Equality; 2016. https://transequality.org/sites/default/files/docs/usts/USTS-Full-Report-Dec17.pdf

3. Haas A, Rodgers P, Herman J. Suicide attempts among transgender and gender non-conforming adults: findings of the National Transgender Discrimination Survey. New York, NY: American Foundation for Suicide Prevention and Los Angeles, CA: Williams Institute; 2014. https://williamsinstitute.law.ucla.edu/wp-content/uploads/Trans-GNC-Suicide-Attempts-Jan-2014.pdf
4. Adams NJ, Vincent B. Suicidal thoughts and behaviors among transgender adults in relation to education, ethnicity, and income: a systematic review. Transgend Health 2019;4:226–46. PMID:31637302 https://doi.org/10.1089/trgh.2019.0009
5. The Trevor Project. 2022 National Survey on LGBTQ Youth Mental Health. West Hollywood, CA: The Trevor Project; 2022. https://www.thetrevorproject.org/survey-2022/
6. Small LA, Godoy SM, Lau C, Franke T. Gender-based violence and suicide among gender-diverse populations in the United States. Arch Suicide Res 2022:1–16. PMID:36353845 https://doi.org/10.1080/13811118.2022.2136023
7. CDC. HIV infection, risk, prevention, and testing behaviors among transgender women—National HIV Behavioral Surveillance, 7 U.S. cities, 2019–2020. HIV Surveillance Special Report 27. Atlanta, GA: US Department of Health and Human Services, CDC; 2021. https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-special-report-number-27.pdf
8. Wirtz AL, Poteat TC, Malik M, Glass N. Gender-based violence against transgender people in the United States: a call for research and programming. Trauma Violence Abuse 2020;21:227–41. PMID:29439615 https://doi.org/10.1177/1524838018757749
9. Waters, E. Lesbian, gay, bisexual, transgender, queer, and HIV-affected hate violence in 2009: a 20th anniversary report from the National Coalition of Anti-Violence Programs. New York, NY: National Coalition of Anti-Violence Programs; 2017. http://avp.org/wp-content/uploads/2017/11/NCAVP-IPV-Report-2016.pdf
10. Serano J. Whipping girl: a transsexual woman on sexism and the scapegoating of femininity. Hachette, UK: Seal Press; 2016.
11. Leddy AM, Weiss E, Yam E, Pulerwitz J. Gender-based violence and engagement in biomedical HIV prevention, care and treatment: a scoping review. BMC Public Health 2019;19:897. PMID:31286914 https://doi.org/10.1186/s12889-019-7192-4
12. Bockting WO, Miner MH, Swinburne Romine RE, Hamilton A, Coleman E. Stigma, mental health, and resilience in an online sample of the US transgender population. Am J Public Health 2013;103:943–51. PMID:23488522 https://doi.org/10.2105/AJPH.2013.301241
13. Bränström R, Stormbom I, Bergendal M, Pachankis JE. Transgender-based disparities in suicidality: a population-based study of key predictions from four theoretical models. Suicide Life Threat Behav 2022;52:401–12. PMID:35067978 https://doi.org/10.1111/sltb.12830
14. Testa RJ, Michaels MS, Bliss W, Rogers ML, Balsam KF, Joiner T. Suicidal ideation in transgender people: gender minority stress and interpersonal theory factors. J Abnorm Psychol 2017;126:125–36. PMID:27831708 https://doi.org/10.1037/abn0000234
15. Trujillo MA, Perrin PB, Sutter M, Tabaac A, Benotsch EG. The buffering role of social support on the associations among discrimination, mental health, and suicidality in a transgender sample. Int J Transgenderism 2017;18:39–52. PMID:29904324 https://doi.org/10.1080/15532739.2016.1247405
16. Herman JL, Brown TN, Haas AP. Suicide thoughts and attempts among transgender adults: findings from the 2015 U.S. Transgender Survey. Los Angeles, CA: Williams Institute; 2019. https://williamsinstitute.law.ucla.edu/publications/suicidality-transgender-adults/
17. Austin A, Craig SL, D'Souza S, McInroy LB. Suicidality among transgender youth: elucidating the role of interpersonal risk factors. J Interpers Violence 2022;37:NP2696–718. PMID:32345113 https://doi.org/10.1177/0886260520915554
18. Carter SP, Allred KM, Tucker RP, Simpson TL, Shipherd JC, Lehavot K. Discrimination and suicidal ideation among transgender veterans: the role of social support and connection. LGBT Health 2019;6:43–50. PMID:30714839 https://doi.org/10.1089/lgbt.2018.0239
19. Dowers E, White C, Cook K, Kingsley J. Trans, gender diverse and non-binary adult experiences of social support: a systematic quantitative literature review. Int J Transgender Health 2020;21:242–57. PMID:34993509 https://doi.org/10.1080/26895269.2020.1771805
20. Scandurra C, Amodeo AL, Valerio P, Bochicchio V, Frost DM. Minority stress, resilience, and mental health: a study of Italian transgender people. J Soc Issues 2017;73:563–85. https://doi.org/10.1111/josi.12232
21. Kanny D, Lee K, Olansky E, et al.; National HIV Behavioral Surveillance Among Transgender Women Study Group. Overview and methodology of the National HIV Behavioral Surveillance Among Transgender Women—seven urban areas, United States, 2019–2020. In: National HIV Behavioral Surveillance Among Transgender Women—seven urban areas, United States, 2019–2020. MMWR Suppl 2024;73 (No. Suppl-1):1-8.
22. Jackson A, Hernandez C, Scheer S, et al. Prevalence and correlates of violence experienced by trans women. J Womens Health (Larchmt) 2022;31:648–55. PMID:35576131 https://doi.org/10.1089/jwh.2021.0559
23. Zimet GD, Dahlem NW, Zimet SG, Farley GK. The multidimensional scale of perceived social support. J Pers Assess 1988;52:30–41. PMID:2280326 https://doi.org/10.1207/s15327752jpa5201_2
24. Green AE, DeChants JP, Price MN, Davis CK. Association of gender-affirming hormone therapy with depression, thoughts of suicide, and attempted suicide among transgender and nonbinary youth. J Adolesc Health 2022;70:643–9. PMID:34920935 https://doi.org/10.1016/j.jadohealth.2021.10.036
25. Knol MJ, VanderWeele TJ. Recommendations for presenting analyses of effect modification and interaction. Int J Epidemiol 2012;41:514–20. PMID:22253321 https://doi.org/10.1093/ije/dyr218
26. Bauer GR, Scheim AI, Pyne J, Travers R, Hammond R. Intervenable factors associated with suicide risk in transgender persons: a respondent driven sampling study in Ontario, Canada. BMC Public Health 2015;15:525. PMID:26032733 https://doi.org/10.1186/s12889-015-1867-2
27. Drescher C, Griffin J, Casanova T, et al. Associations of physical and sexual violence victimization, homelessness, and perceptions of safety with suicidality in a community sample of transgender individuals. Psychol Sex 2019;12:52–63. https://doi.org/10.1080/19419899.2019.1690032
28. Poteat TC, Humes E, Althoff KN, et al. Characterizing arrest and incarceration in a prospective cohort of transgender women. J Correct Health Care 2023;29:60–70. PMID:36037064 https://doi.org/10.1089/jchc.21.10.0118
29. Smith SG, Zhang X, Basile KC, et al. The National Intimate Partner and Sexual Violence Survey (NISVS): 2015 data brief—updated release. Atlanta, GA: US Department of Health and Human Services, CDC, National Center for Injury Prevention Control; 2018. https://www.cdc.gov/violenceprevention/pdf/2015data-brief508.pdf
30. Cha S, Adams M, Wejnert C; NHBS Study Group. Intimate partner violence, HIV-risk behaviors, and HIV screening among heterosexually active persons at increased risk for infection. AIDS Care 2023;35:867–75. PMID:35467983 https://doi.org/10.1080/09540121.2022.2067311

31. Andrzejewski J, Pampati S, Steiner RJ, Boyce L, Johns MM. Perspectives of transgender youth on parental support: qualitative findings from the resilience and transgender youth study. Health Educ Behav 2021;48:74–81. PMID:33106050 https://doi.org/10.1177/1090198120965504
32. Grossman AH, Park JY, Frank JA, Russell ST. Parental responses to transgender and gender nonconforming youth: associations with parent support, parental abuse, and youths' psychological adjustment. J Homosex 2021;68:1260–77. PMID:31774377 https://doi.org/10.1080/00918369.2019.1696103
33. Galupo MP, Henise SB, Davis KS. Transgender microaggressions in the context of friendship: patterns of experience across friends' sexual orientation and gender identity. Psychol Sex Orientat Gend Divers 2014;1:461–70. https://doi.org/10.1037/sgd0000075
34. Aldridge Z, Thorne N, Marshall E, et al. Understanding factors that affect wellbeing in trans people "later" in transition: a qualitative study. Qual Life Res 2022;31:2695–703. PMID:35412264 https://doi.org/10.1007/s11136-022-03134-x
35. Gartner RE, Sterzing PR. Social ecological correlates of family-level interpersonal and environmental microaggressions toward sexual and gender minority adolescents. J Fam Violence 2018;33:1–16. PMID:30828128 https://doi.org/10.1007/s10896-017-9937-0
36. Pulice-Farrow L, Brown TD, Galupo MP. Transgender microaggressions in the context of romantic relationships. Psychol Sex Orientat Gend Divers 2017;4:362–73. https://doi.org/10.1037/sgd0000238
37. Pulice-Farrow L, Gonzalez KA, Lefevor GT. LGBTQ rumination, anxiety, depression, and community connection during Trump's presidency. Psychol Sex Orientat Gend Divers 2023;10:80–90. https://doi.org/10.1037/sgd0000497
38. Starr LR. When support seeking backfires: co-rumination, excessive reassurance seeking, and depressed mood in the daily lives of young adults. J Soc Clin Psychol 2015;34:436–57. PMID:29151669 https://doi.org/10.1521/jscp.2015.34.5.436
39. Domínguez-Martínez T, Robles R. Preventing transphobic bullying and promoting inclusive educational environments: literature review and implementing recommendations. Arch Med Res 2019;50:543–55. PMID:32036103 https://doi.org/10.1016/j.arcmed.2019.10.009
40. Mottet L, Ohle J. Transitioning our shelters: making homeless shelters safe for transgender people. J Poverty 2006;10:77–101. https://doi.org/10.1300/J134v10n02_05
41. Goldenberg T, Jadwin-Cakmak L, Harper GW. Intimate partner violence among transgender youth: associations with intrapersonal and structural factors. Violence Gend 2018;5:19–25. PMID:29588911 https://doi.org/10.1089/vio.2017.0041
42. Niolon PH, Kearns M, Dills J, et al. Preventing intimate partner violence across the lifespan: a technical package of programs, policies, and practices. Atlanta, GA: US Department of Health and Human Services, CDC, National Center for Injury Prevention and Control; 2017. https://www.cdc.gov/violenceprevention/pdf/ipv-technicalpackages.pdf
43. Kurdyla V, Messinger AM, Ramirez M. Transgender intimate partner violence and help-seeking patterns. J Interpers Violence 2021;36:NP11046–69. PMID:31596167 https://doi.org/10.1177/0886260519880171
44. Ryan C. Engaging families to support lesbian, gay, bisexual, and transgender youth: the family acceptance project. Prev Res 2010;17:11–3. https://brettcollins.ca/files/engagingfamiliestosupport.pdf
45. Hwahng SJ, Allen B, Zadoretzky C, Barber Doucet H, McKnight C, Des Jarlais D. Thick trust, thin trust, social capital, and health outcomes among trans women of color in New York City. Int J Transgender Health 2021;23:214–31. PMID:35403110 https://doi.org/10.1080/26895269.2021.1889427

The *Morbidity and Mortality Weekly Report (MMWR)* Series is prepared by the Centers for Disease Control and Prevention (CDC) and is available free of charge in electronic format. To receive an electronic copy each week, visit *MMWR* at *https://www.cdc.gov/mmwr/index.html*.

Readers who have difficulty accessing this PDF file may access the HTML file at *https://www.cdc.gov/mmwr/index2024.html*. Address all inquiries about the *MMWR* Series to Editor-in-Chief, *MMWR* Series, Mailstop V25-5, CDC, 1600 Clifton Rd., N.E., Atlanta, GA 30329-4027 or to mmwrq@cdc.gov.

ISSN: 2380-8950 (Print)