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Toward leaving no one behind: HIV infection among trans communities in Kazakhstan

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ABSTRACT

***Background*:** Central Asia, and Kazakhstan in particular, is virtually absent from global transgender (trans) Human Immunodeficiency Virus (HIV) research, despite evidence of disproportionate barriers to care. This absence erases local realities, weakens the evidence base, and renders communities invisible in policy. While global studies highlight trans people's heightened vulnerability to HIV and sexually transmitted infections (STIs) due to stigma, limited access, and scarce affirming services, little epidemiological data from Central Asia exists. This study addresses that absence by examining both known and newly detected infection prevalence among trans participants in Kazakhstan, underscoring the need to center trans health in the pursuit of collective trans liberation.

***Aims*:** Generate the first empirical data on HIV risk, prevention engagement, and structural determinants among trans people in Kazakhstan, situating findings within regional and global commitments to leaving no one behind in health.

***Methods*:** Analysis of HIV and STI prevalence among 68 trans participants in Almaty, Astana, and Shymkent (2018–2022), drawing on behavioral and biological data from a National Institute on Drug Abuse-funded prevention trial for substance-using cisgender (cis) and trans gay and bisexual men who have sex with men.

***Results*:** Most participants (69%) had tested for HIV at least once, 32% in the past six months; however, 37% did not know their current status. Fourteen (21%) were confirmed HIV-positive, 79% previously unaware. Nearly half tested positive for at least one STI, with 10% for multiple.

***Discussion*:** Findings reveal high HIV and STI burdens and critical gaps between self-reported awareness and confirmed diagnoses. Testing rates fall below UNAIDS 95-95-95 targets, highlighting the urgent need for expanded testing, research, and community-led interventions. Making these realities visible is essential for improving health in Kazakhstan and advancing collective trans liberation worldwide; without centering trans experiences, the global struggle for trans health and rights remains incomplete and the principle of leaving no one behind unfulfilled.

PLAIN LANGUAGE SUMMARY

Transgender (trans) people in Kazakhstan are largely excluded from local and global HIV research. This invisibility in health policy persists despite the stigma, discrimination, and lack of affirming care that heighten risk for HIV and other STIs. This study analyzed data from 68 trans participants in Almaty, Astana, and Shymkent. While most had tested for HIV at least once, more than one-third did not know their current status. One in five (21%) tested positive, and most of these infections were previously unknown. This gap between self-reported and confirmed status reveals an urgent blind spot: many trans people are living with HIV without knowing it. Nearly half also tested positive for at least one STI, with some for multiple. These disparities are not inherent, but produced by social conditions that block access to care. Meeting global HIV goals requires prioritizing trans voices and addressing both known and undiagnosed infections through inclusive, community-led strategies.

KEYWORDS

Central Asia; global health equity; HIV testing; nonbinary; sexually transmitted infections (STIs); transgender health

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Background

The Joint United Nations Programme on HIV/AIDS (UNAIDS) reported that, between 2021 and 2022, the number of people living with Human Immunodeficiency Virus (HIV) had risen globally by 1.3 million, reaching 39 million total (Joint United Nations Programme on HIV/AIDS [UNAIDS], 2023). As the rise in HIV rates persists around the world, intervention research must continue to identify and target geographic locations and communities most vulnerable to infection. Compared to the global median HIV incidence of 0.7%, the median prevalence is 7.5% among men who have sex with men (MSM) and 10.3% among transgender (trans[1]) people (UNAIDS, 2023). A 2021 systematic review revealed that up to 25.1% of MSM in Central Asia are living with HIV, but no findings specific to trans communities were reported (Davlidova et al., 2021). At the time of the study, Kazakhstan, specifically, had experienced the highest increase in HIV infections in Central Asia since 2010 (73% increase from 2010 to 2020), and the prevalence among MSM in Kazakhstan experienced an upward trend from 0.3% in 2009 to 6.2% in 2017 (Semchuk, 2018; UNAIDS, 2021).

Most global transgender health and HIV literature omits Central Asia entirely, or subsumes it under broad geopolitical categories that obscure its specific needs (Poteat et al., 2016; Reisner et al., 2016). This invisibility matters: without region-specific evidence, interventions may be ill-suited to local realities, and global HIV elimination goals risk failure (UNAIDS, 2022). Such omissions directly contradict global commitments to "leaving no one behind" (United Nations Department of Economic and Social Affairs [DESA], 2024). By situating Kazakhstan within the global transgender HIV research landscape, this study addresses the urgent question, 'why should the global health community care?', and provides data to inform both local and international responses.

While research involving MSM in Central Asia and Kazakhstan is beginning to increase, empirical work involving trans populations in Central Asia remains nascent. Available studies are primarily conceptual or formative qualitative inquiries. Wilkinson and Kirey (2014), for example, provide a comprehensive examination of the sociopolitical implications of the 'LGBT' acronym, committing a specific focus to trans youth in Kyrgyzstan. Kirey-Sitnikova's (2023) qualitative study on trans experience reveals that trans individuals face extreme hate and stigma across systemic, community, familial, and interpersonal dimensions.

Factors impacting HIV testing rates among MSM and trans have been examined, such as stigma and community connectedness; victimization, discrimination, and disruptions to HIV testing and care; and the intersection of polydrug use and sexual risk behaviors with HIV testing; though the findings are shaped more heavily by the experiences of MSM than those of trans individuals (Paine et al., 2021, 2023). Additionally, trans and nonbinary people have been found to be significantly more likely to report gender or sexuality-related victimization, discrimination, or both than cisgender (cis) respondents are—experiences associated with disruptions in HIV care (James et al., 2016; Paine et al., 2023; Poteat, 2016). There is a dearth of studies and interventions responding to the specific circumstances and situations experienced by trans communities (Baral et al., 2013). Addressing this critical gap and developing an appropriate response require baseline epidemiological data on HIV prevalence, testing, and related sexual health indicators, particularly in underrepresented regions such as Central Asia, where such data are virtually absent.

The data in this study are derived from a stepped-wedge cluster randomized trial of a peer-actuated HIV care intervention for cis gay, bisexual, and other men who have sex with men (GBMSM), and trans, nonbinary, and genderfluid (or otherwise not cis)(trans) individuals who have sex with men (Paine et al., 2023; UNAIDS, 2021, 2023). We conducted a secondary analysis of the trans subsample to generate the first empirical data addressing key questions: (1) What is the prevalence of HIV and sexually transmitted infections (STIs) among a multi-city sample of trans individuals in Kazakhstan?, and (2) What proportion of HIV infections remain unknown within this population? The answers to these questions help situate Kazakhstan's patterns of testing and awareness

within regional and global public health targets. Together, these questions address how Kazakhstan's trans communities have been left behind in HIV research and care, and what is needed to bring them into the fold of global health equity.

Methods

Study design and setting

This study is a secondary analysis of data obtained during a National Institute on Drug Abuse (NIDA)-funded clinical trial of a social network-based behavioral preventive intervention for GBMSM individuals at elevated risk for HIV in Kazakhstan (Wu et al., 2024). The parent study sought to enroll a sample of GBMSM individuals in the Kazakhstan cities of Almaty, Astana, and Shymkent. The procedures for sampling, recruitment, and obtaining informed consent are described in detail in prior publications (Lee et al., 2022; Paine et al., 2021).

Participants

The eligibility criteria for participation in the trial included (1) being assigned male at birth (AMAB) or identifying as a man at any point in life (2) residing in one of the three study cities, (3) being 18 years of age or older, (4) reporting one or more incidents of consensual sex with a man in the past 12 months, and (5) reporting one or more incidents of binge drinking, illicit drug use, or both in the past 90 days (Wu et al., 2020). The first criterion (AMAB or identifying as a man at any point) allowed inclusion of trans women, nonbinary/gender-diverse people, and trans men (assigned female at birth [AFAB]). Our analytic TGE subsample includes only those whose current gender identity differs from sex assigned at birth; the "male/man" entries are trans men, not cis men. Between August 2018 and March 2022, 629 participants who met these eligibility criteria completed a structured interview and 557 completed biological testing for HIV, syphilis, gonorrhea, and chlamydia.

The current analyses focus on the cases for which respondents (1) completed the HIV assay and (2) reported a current gender identity that does not normatively align with their sex assigned at birth (i.e. trans individuals). Aside from current gender identity, there were no significant sociodemographic differences in the reported measures between this sample of trans individuals and the remaining sample in the parent study who identify as cis MSM and completed the study's HIV testing protocol ($n = 557$). The final sample size for this analysis was 68.

Measures and study variables

HIV testing history

HIV testing history was assessed using items adapted from the HIV/HCV Testing Domains Measure questionnaire (National Institutes of Health and National Institute on Drug Abuse, 2013). Participants were first asked whether they had ever received an HIV test (yes, no). If reporting any prior test, participants were asked about the length of time since their most recent test was performed sand were specifically instructed to consider HIV testing other than that provided by the study. Responses were then coded for ever having received an HIV test and having received an HIV test in the past six months.

HIV and STI statuses

HIV status was assessed through self-reports and biological assays. Participants self-reported their current HIV status as negative, positive, or unknown. For each biological assay (for HIV and STIs), staff provided pretest counseling, testing, and posttest counseling. For HIV testing, trained clinical staff administered an oral rapid test using OraQuick ADVANCE (OraSure Technologies, 2020). Additionally, confirmatory testing using blood Western blot (a second-step diagnostic tool) was performed by the participant's city-run 'AIDS Center' and was provided to all participants receiving reactive rapid test results. When testing for gonorrhea and chlamydia, staff collected urine and rectal samples to be tested by local laboratories in each study city using AmpliSens (a nucleic acid amplification test with 99.9% sensitivity and specificity) (Rumyantseva et al., 2015). To test for syphilis, staff conducted a rapid blood test using Alere Determine Syphilis

TP with a capillary blood sample collected *via* a finger prick (Laughney et al., 2023). Reactive rapid tests were followed by confirmatory testing in Dermato-Venereological Dispensaries using a nontreponemal test (test for Venereal Diseases Research Laboratory [VDRL] or, in VDRL absence, a Wasserman reaction) and a treponemal test (*Treponema pallidum hemagglutination assay* particle agglutination [TPHA]). All the selected laboratories were certified by the Kazakhstan Ministry of Health for STI testing. For any detected and confirmed HIV infections or STIs, the study provided supportive referral for treatment (e.g. assisted with making appointments for medical care, offered accompanying participants for treatment appointments, etc.).

Sociodemographic and background characteristics

Participants self-reported their current residence (Almaty, Astana, Shymkent), gender identity (female/woman, male/man, other, followed by response to 'please specify'), age (in years), preferred language of survey completion (Russian, Kazakh), legal marital status (single/never married, married, no longer with spouse, other), education completion status (less than high school, high school to some college, baccalaureate or higher degree), current employment status (working full-time, working part-time, student, unemployed), and monthly income (in Kazakh Tenge). Additionally, participants self-reported their lifetime and recent (e.g. past 90 days) incidents of binge drinking, illicit use of drugs, or both (Paine, 2023; Laughney, 2023).

Data analyses

All statistical analyses were conducted using SPSS Version 28.0 (IBM Corp, 2021). One way ANOVA or Fisher-Freeman-Halton Exact Tests (due to small cell sizes) were used to assess the significance of differences in participant sociodemographics, background characteristics, and HIV and STI indicators by city of residence.

Author positionalities

This project was conducted by a collaborative team spanning Kazakhstan and the United States, with a mix of cis and trans authors and queer and non-queer researchers, with local Kazakh and international perspectives. Several authors identify as transgender, genderqueer, queer, or a combination of these identities, and bring lived experience—including in each of the study cities—of navigating health inequities that informs our interpretation of the data. Others identify as cis researchers with longstanding commitments to advancing sexual health equity for trans communities. Local Kazakh investigators and staff led participant engagement, data collection, and interpretation within cultural and linguistic contexts, ensuring that knowledge production did not remain solely in the hands of U.S.-based institutions. Our analytic approach is shaped by these positionalities. As international researchers with institutional privilege, we recognize the risks of reproducing extractive or colonial dynamics in global health research. As trans and queer scholars, we are also committed to resisting erasure and situating our work within broader struggles for collective trans liberation. By making our positionalities explicit, we aim to practice transparency, hold ourselves accountable to the potential biases we bring, and ground this work in equity and justice. This reflexive stance underscores why we emphasize not only epidemiological findings but also the ethical imperative to prioritize those most impacted and least engaged in care, so that trans health needs in Kazakhstan are recognized, resourced, and addressed to advance collective trans liberation.

Results

The sociodemographic and background characteristics of this sample of 68 trans individuals in Kazakhstan are summarized in Table 1. Those in the 'male/man' category ($n = 2$) were trans men; no cisgender men were included. The sample was predominantly transfeminine, with additional nonbinary/genderfluid and agender participants. As noted in the methods section, this sample of trans people did not significantly differ from the sample of cis men in the parent study with respect to any of these variables (except for gender identity). Among those who responded outside of the 'female/woman' or 'male/man' binary gender identities (i.e. 'Other' in Table 1), the most common

Table 1. Sociodemographic & background characteristics by Kazakhstan study city ($N = 68$).

	Total sample ($N = 68$)	Almaty ($n = 28$)	Astana ($n = 14$)	Shymkent ($n = 26$)	p Value for difference among cities
Gender identity n (%)					
Female/woman	37 (54%)	10 (36%)	8 (57%)	19 (73%)	.03
Male/man	2 (2.9%)	1 (3.6%)	0 (0%)	1 (3.8%)	
Other	29 (43%)	17 (61%)	6 (43%)	6 (23%)	
Age (years) $\bar{x}$ (SD)	29.20 (7.7)	29.1 (7.7)	25.5 (3.7)	31.2 (8.7)	.08
Preferred language n (%) Russian Kazakh	57 (84%)11 (16%)	27 (96%)1 (4%)	13 (93%)1 (7.1%)	17 (65%)9 (35%)	.007
Marital status n (%)					
Single, never married	54 (80%)	25 (89%)	12 (86%)	17 (65%)	.11
Married	6 (8.8%)	0 (0%)	1 (7.1%)	5 (19%)	
No longer with spouse	7 (10%)	2 (7.1%)	1 (7.1%)	4 (15%)	
Other	1 (1.5%)	1 (3.6%)	0 (0%)	0 (0.0%)	
Education[a] n (%)					
Less than high school	5 (7.5%)	1 (3·6%)	1 (7.7%)	3 (12%)	.60
High school to some college	32 (48%)	12 (43%)	6 (46%)	14 (54%)	
Baccalaureate or higher degree	30 (45%)	15 (54%)	6 (46%)	9 (35%)	
Employment[a] n (%)					
Working full-time	37 (55%)	15 (56%)	9 (64%)	13 (50%)	.61
Working part-time	17 (25%)	6 (22%)	3 (21%)	8 (31%)	
Student	4 (6.0%)	3 (11%)	1 (7.1%)	0 (0%)	
Unemployed	9 (13%)	3 (11%)	1 (7.1%)	5 (19%)	
Monthly income (KZT × 1000) $\bar{x}$ (SD)	151 (193)	136 (82.6)	145 (74.3)	169 (299)	.82
Substance use n (%)					
Binge drinking, ever	62 (91%)	25 (89%)	13 (93%)	24 (93%)	.99
Binge drinking, past 90 days	56 (82%)	24 (86%)	9 (64%)	23 (89%)	.19
Illicit use of drugs, ever	49 (72%)	20 (71%)	13 (93%)	16 (62%)	.11
Illicit use of drugs, past 90 days	33 (49%)	12 (43%)	9 (64%)	12 (49%)	.45

[a]$N = 67$ (1 missing observation due to 'refuse to answer')

($n = 13$) were nonbinary identifications (or a corresponding description such as 'between woman and man'), followed by genderfluid identifications (or an experience corresponding to genderfluidity or genderqueerness such as 'sometimes a woman and sometimes a man') ($n = 11$). The remaining participants in this subset were agender ($n = 2$) or remained uncategorized (e.g. 'don't know' or 'undecided'). Between cities, significant differences in gender identity and language preference were observed in the composition of trans participants. Among those identified as 'female/woman' ($n = 19$), Shymkent had the highest proportion, and Almaty had the highest proportion of those identified outside of the 'male/man' or 'female/woman' binary ($n = 17$). Finally, among the study cities, Shymkent had the highest proportion of trans respondents who reported a preference for communicating in Kazakh.

Table 2 presents a summary of HIV testing history, HIV status (both self-reported and confirmed by biological assay), and STI status among this sample of trans individuals in Kazakhstan. While the majority (69%) have undergone HIV testing in their lifetime and about a third (32%) recently completed an HIV test, these rates indicate that this sample of trans individuals fell short of the 90-90-90 goals at the start of the study, as well as the current 95-95-95 UNAIDS targets (UNAIDS, 2015). This is underscored by more than a third (37%) of participants who did not know their current HIV status and 21% of those who tested positive on the biological assay, far exceeding the 4.4% of participants who reported living with HIV. In fact, only three of the 14 (21%) individuals living with HIV reported knowing they were living with HIV. These findings highlight that trans individuals in Kazakhstan are not adequately reached by existing testing, treatment, and prevention efforts, leaving them behind in progress toward global HIV goals.

Table 3 presents a more detailed breakdown of the comparison between self-reported and biologically confirmed HIV status. Of the seven participants who initially reported being HIV-negative but subsequently tested positive, five currently identified as female, and two had 'other' gender identities (one person was agender and the other was non-binary). Of the four individuals who were initially unaware of their HIV status and subsequently tested positive, two currently identified as female, and two had 'other' gender

Table 2. HIV & STI rates by Kazakhstan study city ($N = 68$).

	Total sample ($N = 68$)	Almaty ($n = 28$)	Astana ($n = 14$)	Shymkent ($n = 26$)	p Value for difference among cities
HIV testing *n* (%)					
Ever	47 (69%)	20 (71%)	14 (100%)	13 (50%)	.002
Past 6 mos.	22 (32%)	9 (32%)	9 (64%)	4 (15%)	.009
HIV status self-reported *n* (%)					
Negative	40 (59%)	20 (71%)	13 (93%)	7 (27%)	<.001
Unknown/never tested	25 (37%)	8 (29%)	0 (0%)	17 (65%)	
Positive	3 (4.4%)	0 (0%)	1 (7.1%)	2 (8.0%)	
HIV status biologically confirmed *n* (%)					
Negative	54 (79%)	24 (86%)	10 (71%)	20 (77%)	.50
Positive	14 (21%)	4 (14%)	4 (29%)	6 (23%)	
Sexually transmitted infection (STI) [a] *n* (%)					
Chlamydia [a]	14 (23%)	5 (21%)	4 (29%)	5 (22%)	.86
Gonorrhea [a]	5 (8.2%)	1 (4.2%)	1 (7.1%)	3 (13%)	.73
Syphilis [a]	17 (25%)	6 (21%)	5 (36%)	6 (23%)	.63
Any of the above STIs [a]	*29 (47%)*	*10 (40%)*	*8 (57%)*	*11 (48%)*	*.58*

[a]$N = 61$ (7 missing observations due to refusal [$n = 1$] or sample unable to be assayed/inconclusive [$n = 6$])

Table 3. Self-reported vs. biologically confirmed HIV status ($N = 68$).

		Biologically confirmed	
		Negative (column percentage)	Positive (column percentage)
Self-reported	Negative	33 (61%)	7 (50%)
	Unknown/never tested	21 (39%)	4 (29%)
	Positive	0 (0%)	3 (21%)

identities (one of whom was genderfluid and the other of whom was nonbinary). All three respondents who accurately reported living with HIV were currently identified as females.

The sexual health needs of this sample of trans individuals in Kazakhstan extend beyond HIV, with almost half (47%) of the individuals who completed STI testing receiving positive results for chlamydia, gonorrhea, or syphilis (Table 2 presents a breakdown of STI prevalence by city). Almost 10% ($n = 6$) of this sample tested positive for more than one of these STIs.

Discussion

To our knowledge, this is the first study in the published research literature focused exclusively on trans individuals in Kazakhstan that involved participants from multiple cities across the country. We found that 14 out of 68 (21%) trans individuals in the entire sample tested positive—*via* rapid and confirmatory testing—for HIV, and of those 14 confirmed positive results, 11 participants (79%) appeared unaware that they were living with HIV (seven said they were negative and the other four did not know their HIV status). These results strongly suggest a substantial gap in achieving the UNAIDS 95-95-95 targets. The concern for the sexual health of trans individuals is further amplified given that almost half (47%) of the sample tested positive for chlamydia, gonorrhea, syphilis, or a combination of these infections. Interpreting these findings in light of an intentionally high-risk sampling frame underscores the need to prioritize those least reached by current services. Framing these results through a critical lens highlights that HIV targets cannot be met if the most marginalized trans people remain ignored. Progress requires centering those at greatest risk and least connected to care.

While city-level differences should be interpreted with caution due to sample size, notable patterns emerged that underscore the heterogeneity of trans communities in Kazakhstan. Shymkent had the largest proportion of transfeminine participants and the highest prevalence of Kazakh language preference, whereas Almaty had the highest proportion of nonbinary participants. These local variations in identity, language, and sociocultural context highlight the need for public health interventions that are tailored to ensure equitable access to testing and treatment across diverse trans populations.

Limitations

The sample in this study is not generalizable to larger trans populations in Kazakhstan for several reasons. Participants may have withheld trans or

nonbinary identities given local geopolitical trends increasing safety risks and decreasing healthcare access for trans communities (Knight, 2023). This study targeted GBMSM individuals, thus it is unclear whether exclusive recruitment using trans-specific and trans-affirming approaches would have reached a different sample of trans individuals. Furthermore, the parent study only enrolled those who reported illicit use of substances. Recruitment through GBMSM social networks and the requirement of recent substance use likely enriched the sample for individuals at elevated HIV/STI risk. As a result, estimates should not be interpreted as population prevalence for all trans people in Kazakhstan but as patterns among those furthest from prevention and care. All individuals in this sample were either male at birth or identified as 'man/male' at some point in their lives; therefore, this parent study's emphasis on GBMSM rather than trans individuals may have failed to actively engage or even excluded several trans subpopulations (e.g. transfeminine people, nonbinary people, and transmasculine people who do not have sex with men, etc.). Given the predominance of transfeminine participants, findings may more closely reflect transfeminine experiences; estimates for trans men and some nonbinary subgroups are less precise. These data do not include trans individuals living in other (especially more rural) regions of the country. Despite this study having one of the largest sample sizes of trans in Kazakhstan to date to our knowledge, the sample size of 68 prohibited any meaningful multivariable analyses. However, from an equity and public-health perspective, reaching those at greatest vulnerability and least engagement with services is precisely where progress toward 95-95-95 will have the largest impact and where "leave no one behind" must be operationalized (DESA, 2024).

Implications and conclusions

This study makes visible an often-erased public health reality: trans communities in Kazakhstan face HIV and STI burdens that are not the result of inherent risk, but of structural and social conditions that systematically undermine their health and safety. The scarcity of trans-specific data in Kazakhstan, as well as the near absence of trans voices in national and regional health research, has kept these disparities invisible in policy and programming. Though limited in scope, our findings underscore that without targeted, trans-affirming, community-led interventions, trans people will continue to be left behind in achieving the UNAIDS 95-95-95 targets and broader global health equity goals (UNAIDS, 2015). City-level differences in gender identity composition and language preference further demonstrate that trans communities are not a monolith; heterogeneity in identity, experience, and exposure to stigma and discrimination must be central to designing equitable interventions.

To close these 95-95-95 gaps, researchers, healthcare providers, and policymakers must treat trans health as integral to public health. As the rallying cry reminds us: 'Trans Healthcare is Healthcare'. Active erasure of trans experience, health, and life (e.g. U.S. Executive Order 14168 "Defending Women from Gender Ideology Extremism and Restoring Biological Truth to the Federal Government") is ongoing (Mulvihill, 2025). Erasing trans-related terms from research and eliminating policies and programs that provide trans populations with the care they need does not alleviate the public health concern of STI and HIV infection or transmission (Sun et al., 2025). Eliminating trans-affirming programs does not prevent HIV or STI transmission; it deepens vulnerability for trans individuals and their partners. This is not only a violation of rights but also a direct threat to public health.

Future research must explore the extent to which increased trans-affirming HIV and STI testing and other sexual health initiatives, outreach, messaging, and structural interventions play a role in decreasing the prevalence of infection among trans individuals. Centering trans people who use substances and those connected to GBMSM networks in testing, linkage, and retention strategies is key. Peer-led outreach, low-barrier testing, and integrated HIV and substance-use services are ethically essential and epidemiologically effective for advancing 95-95-95. Yet being invisible in data has never meant being safe from disease. Only by recognizing, resourcing, and addressing trans health needs in Kazakhstan can we ensure that no one is left behind.

Note

1. This article uses 'trans' as an umbrella term referring to individuals whose gender identity differs from their sex assigned at birth, inclusive of nonbinary, gender-fluid, and agender identities.

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Ethics statement

All protocols and materials used in the trial were reviewed and approved by the Institutional Review Boards of Columbia University and Al-Farabi Kazakh National University School of Public Health.

Author contributions

EW, JS, KR, and YL led the study conceptualization, data analysis, and manuscript writing. AT, EW, TH, and SP led the parent study design and oversite of its implementation. GM, GZ, VV, YL, and GM were responsible for overseeing data collection. All authors reviewed and edited the manuscript and take responsibility for the integrity and accuracy of the analysis.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

Deidentified study data from NIDA-funded prevention trial (NCT02786615) for substance-using cis and trans gay and bisexual men who have sex with men available from EW upon reasonable request.

References

Baral, S. D., Poteat, T., Strömdahl, S., Wirtz, A. L., Guadamuz, T. E., & Beyrer, C. (2013). Worldwide burden of HIV in transgender women: A systematic review and meta-analysis. *The Lancet. Infectious Diseases*, *13*(3), 214–222. https://doi.org/10.1016/S1473-3099(12)70315-8

Davlidova, S., Haley-Johnson, Z., Nyhan, K., Farooq, A., Vermund, S. H., & Ali, S. (2021). Prevalence of HIV, HCV and HBV in Central Asia and the Caucasus: A systematic review. *International Journal of Infectious Diseases: IJID*, *104*, 510–525. https://doi.org/10.1016/j.ijid.2020.12.068

IBM Corp. (2021). *IBM SPSS statistics for windows, Version 28.0*.

James, S., Herman, J., Rankin, S., Keisling, M., Mottet, L., & Anafi, M. A. (2016). *The report of the 2015 US transgender survey*. Justice Information Research Network. https://justiceresearch.dspacedirect.org/items/00c52701-7548-40e6-bb8e-f59f8d8476b2

Joint United Nations Programme on HIV/AIDS. (2015). Understanding fast track: Accelerating action to end the AIDS epidemic by 2023. In *UNAIDS reference: Vol. JC 2743. Fast-track: Ending the AIDS epidemic by 2030* (pp. 1–12). United Nations.

Joint United Nations Programme on HIV/AIDS. (2021). *UNAIDS data 2021*. https://www.unaids.org/en/resources/documents/2021/2021_unaids_data

Joint United Nations Programme on HIV/AIDS. (2022). *In danger: UNAIDS global AIDS update 2022*. https://www.unaids.org/en/resources/documents/2022/in-danger-global-aids-update

Joint United Nations Programme on HIV/AIDS. (2023, August 31). *Global HIV & AIDS statistics—Fact sheet* (World AIDS Day Fact Sheet).

Kirey-Sitnikova, Y. (2023). Transgender activism in Kazakhstan, Kyrgyzstan and Tajikistan. *Central Asian Survey*, 1–16.

Knight, K. (2023, June 2). *Russia moves to ban trans health care: Exceptions for medically unnecessary "normalizing" operations on intersex children*. Human Rights Watch. https://www.hrw.org/news/2023/06/02/russia-moves-ban-trans-health-care

Laughney, C. I., Lee, Y. G., Mergenova, G., Vinogradov, V., Zhakupova, G., Paine, E. A., Primbetova, S., Terlikbayeva, A., & Wu, E. (2023). Earlier sexual debut as a risk factor for substance use among men who have sex with men (MSM) in Kazakhstan. *Global Social Welfare*, *11*(3), 225–232. https://doi.org/10.1007/s40609-023-00298-3

Lee, Y. G., Zhakupova, G., Vinogradov, V., Paine, E. A., Laughney, C. I., Reeder, K., Davis, A., Hunt, T., Mergenova, G., Primbetova, S., Terlikbayeva, A., & Wu, E. (2022). Polydrug use, sexual risk, and HIV testing among cisgender gay, bisexual, and other men and transgender and nonbinary individuals who have sex with men in Kazakhstan. *AIDS Education and Prevention: Official Publication of the International Society for AIDS Education*, *34*(5), 413–426. https://doi.org/10.1521/aeap.2022.34.5.413

Mulvihill, G. (2025, February 1). 6 Ways Trump's executive orders are targeting transgender people. Public Broadcasting Service News/*Politics*.

National Institutes of Health and National Institute on Drug Abuse. (2013, June). *Seek, test, treat and retain for vulnerable populations: Data harmonization measure (vulnerable populations data harmonization)*. National Institutes of Health, Research Portfolio Online Reporting Tools, RePORTER.

OraSure Technologies. (2020, June 26). *OraQuik rapid antibody test advance (HIV-1/2)* [Fact sheet]. OraSure Technologies Infectious Disease Testing.

Paine, E. A., Lee, Y. G., Mergenova, G., Vinogradov, V., Laughney, C. I., Davis, A., Terlikbayeva, A., Primbetova, S., Hunt, T., & Wu, E. (2023). Compounding vulnerabilities: Victimization and discrimination is associated with COVID-19 disruptions to HIV-related care among gay, bisexual, and other men and transgender and nonbinary people who have sex with men in Kazakhstan. *AIDS Care*, *35*(5), 651–657. https://doi.org/10.1080/09540121.2022.2148956

Paine, E. A., Lee, Y. G., Vinogradov, V., Zhakupova, G., Hunt, T., Primbetova, S., Terlikbayeva, A., El-Bassel, N., & Wu, E. (2021). HIV stigma, homophobia, sexual and gender minority community connectedness and HIV testing among gay, bisexual, and other men and transgender people who have sex with men in Kazakhstan. *AIDS and Behavior*, *25*(8), 2568–2577. https://doi.org/10.1007/s10461-021-03217-9

Poteat, T., Scheim, A., Xavier, J., Reisner, S., & Baral, S. (2016). Global epidemiology of HIV infection and related syndemics affecting transgender people. *Journal of Acquired Immune Deficiency Syndromes (1999)*, *72*(Suppl 3), S210–S219. https://doi.org/10.1097/QAI.0000000000001087

Reisner, S. L., Poteat, T., Keatley, J., Cabral, M., Mothopeng, T., Dunham, E., Holland, C. E., Max, R., & Baral, S. D. (2016). Global health burden and needs of transgender populations: A review. *Lancet*, *388*(10042), 412–436. https://doi.org/10.1016/S0140-6736(16)00684-X

Rumyantseva, T., Golparian, D., Nilsson, C. S., Johansson, E., Falk, M., Fredlund, H., Van Dam, A., Guschin, A., & Unemo, M. (2015). Evaluation of the new AmpliSens multiplex real-time PCR assay for simultaneous detection of *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, *Mycoplasma genitalium*, and *Trichomonas vaginalis*. *APMIS: Acta Pathologica, Microbiologica, et Immunologica Scandinavica*, *123*(10), 879–886. https://doi.org/10.1111/apm.12430

Semchuk, N. (2018). *Brief on HIV among MSM in Kazakhstan* (V. Vinogradov, Ed.; Right to Health; Issue Brief). Eurasian Coalition on Male Health (ECOM) & Global Fund to Fight AIDS, Tuberculosis & Malaria.

Sun, L. H., Keating, D., & Nirappil, F. (2025, February 1). CDC removes gender, equity references in public health material. *The Washington Post*.

United Nations Department of Economic and Social Affairs. (2024). *Leaving no one behind* [Fact sheet]. https://www.un.org/en/desa/leaving-no-one-behind

United Nations International Children's Emergency Fund. (2018). *Alere determine, syphilis RDT, kit/100* [Fact sheet]. UNICEF In Vitro Diagnostic Tests.

Wilkinson, C., & Kirey, A. (2014). What's in a name? The personal and political meanings of 'LGBT'for non-heterosexual and transgender youth in Kyrgyzstan. In *Youth in the former Soviet South* (pp. 105–119). Routledge.

Wu, E., Lee, Y. G., Vinogradov, V., Zhakupova, G., Mergenova, G., Davis, A., Paine, E. A., Hunt, T., Reeder, K., Primbetova, S., Terlikbayeva, A., Laughney, C., Chang, M., Baiserkin, B., Abishev, A., Tukeyev, M., Abdraimov, S., Denebayeva, A., Kasymbekova, S., Tazhibayeva, G., & Kozhakhmet, M. (2024). Increasing HIV testing among sexual and gender expansive men in Kazakhstan: A stepped-wedge randomized trial of a community-level intervention. *medRxiv: The Preprint Server for Health Sciences*. https://doi.org/10.1101/2024.08.01.24311235

Wu, E., Lee, Y. G., Zhakupova, G., Vinogradov, V., Primbetova, S., Terlikbayeva, A., … Mergenova, G. (2020, July). *Prevalence and correlates of HIV infection and unknown HIV infection among men who have sex with men (MSM) in Kazakhstan: Evidence for a brewing syndemic from a multi-city study* [Poster presentation]. *International AIDS Society Virtual Conference, Virtual.*